

Date: April 8, 2022

To: Carmine DeBonis, Jr., Deputy County Administrator for Public Works

From: Linda Mayro, Director, Office of Sustainability and Conservation
Kathleen Chavez, P.E., Water Policy Manager

RE: **Water and Wastewater Infrastructure, Supply and Planning (WISP) Study Post Action Plan Report 2021**

The WISP Report, completed in 2010, was followed by a five-year action plan period ending in 2015. As previously noted, although the City of Tucson ended WISP reporting, Pima County continues to report on the status of WISP action plan related items. Accordingly, attached is the 2021 WISP Post-Action Plan Report. WISP reports, Phase 1 and 2, Technical Reports and Action Plans are available at the [WISP Website](#).

Pima County has continued to make progress toward several important WISP goals, however some goals remain unresolved. Below is a list of key deficiencies and progress:

- **Unresolved: Tucson Water Service Area Policy** – The City policy limits development in suitable growth areas in unincorporated Pima County and outside the Conservation Land System as specified in the WISP recommendations. The policy does not allow for exceptions such as low-income housing and is confined to the narrow exemptions in the Primary Jobs Incentive.

Furthermore, the City adopted a differential rate for Tucson Water’s unincorporated customers. County Administration has deemed this policy discriminatory and the Board of Supervisors approved filing of suit against the City. The City did not follow statutory procedures in adopting the differential rate ordinance and has not demonstrated a basis for such a rate with a valid cost of service study, instead finding an artificial cost differential based strictly on a policy decision and separated from a normal rate setting process.

- **Progress: Respect for Environment Element** – Pima County continues to make progress in meeting WISP environmental goals. The Regional Flood Control District (RFCD) has developed a comprehensive plan, the Lower Santa Cruz River Management Plan, of benefit to all jurisdictions along the Santa Cruz River. Sequence and funding of 20 projects has been determined by an Alternative Working Group and RFCD has produced extensive reports throughout the process supporting the plan’s development and implementation.

In 2021, two Conservation Effluent Pool (CEP) projects were approved for the Santa Cruz River, one submitted by RFCD for a volume of 5,600 acre feet a year of effluent to maintain river flow from the Agua Nueva WRF outfall for the endangered Gila topminnow and the other a City of Tucson request for 110 acre feet dedicated to the evapotranspiration volume along the new Santa Cruz River Heritage project. CEP project water will be delivered in 2022. The County and

City have successfully developed a water supply for the environment and will deliver reclaimed water to support endangered species habitat and riparian wetlands.

The County supports developing water supplies for the environment and proposes legislation that would allow all new managed effluent recharge projects to accrue 95 percent credit for in-channel delivery. As the drought continues and water shortages are experienced, the competition for water will increase, making it more difficult to secure water for environmental purposes. By encouraging in-channel effluent managed recharge, existing streambeds can be used for aquifer replenishment and environmental restoration, creating a multi-benefit water project.

- **Progress: Lower Santa Cruz River Basin Study** – This six-year study, led by the US Bureau of Reclamation and its cost share partners, including the Regional Wastewater Reclamation Department, has identified supply-demand imbalances requiring adaptation strategies through 2060. Imbalances were calculated based upon a scenario planning process that utilized climate, service area, surface water and groundwater models. The study helps prepare the Tucson Active Management Area for drought and climate change into the future and opens eligibility for additional federal funding for adaptation strategies considered in the study.
- **Progress: Demand Management** – The Regional Flood Control District (RFCD) has developed a workplan to expand the beneficial use of urban stormwater and increase aquifer recharge. RFCD is evaluating regional, neighborhood and lot scale capital projects, retrofitting of existing flood control infrastructure and in-channel improvements to regional watercourses. Maximizing the use of rainwater, stormwater flows and effluent recharge meets both demand management and water supply WISP goals.

Additional successful Low Impact Development/Green Infrastructure (LID/GI) efforts include the planting of 4,409 trees by the County and 24.7 acres of new green infrastructure projects. RFCD has constructed 34.1 acres of restoration projects using non-potable water.

The WISP goals adopted by the County and City remain relevant as many are continuous efforts to ensure water sustainability and reliability as the region remains in drought. The post-Action Plan reporting is an inter-departmental effort that draws together disparate activities to better inform on the successful implementation of these shared goals and provide a more complete summary of water and land conservation efforts.

Should you have any questions, please feel free to contact us.

Attachment

Copy: Yves Khawam, PhD., Assistant County Administrator for Public Works
Suzanne Shields, Director, Regional Flood Control District
Jackson Jenkins, Director, Regional Wastewater Reclamation Director

Water & Wastewater Infrastructure, Supply and Planning Study Post Action Plan Report 2021

The Water & Wastewater Infrastructure, Supply and Planning Study (WISP), or City/County Water Study, was initiated in 2008 and produced a two-phase report assessing existing water resources, infrastructure capacity and demand scenarios. Based upon the first phase framework, that included an extensive stakeholder process, agreement was reached on a range of topics central to sustainable water planning. An action plan was developed to implement the 19 shared goals and 56 recommendations over a five-year period. The WISP Action Plan for Water Sustainability 2011-2015 (Action Plan) was adopted by both Mayor and Council and the Board of Supervisors in 2010. The City and County submitted a year-end progress report for each year of the plan period. Despite the closing of the plan period, County staff continue reporting on the progress of WISP goals. The WISP reports are available at [Water & Wastewater Infrastructure, Supply & Planning Study ... \(pima.gov\)](#)

The Action Plan contains four elements, each with programs, goals, recommendations, and action items to implement the recommendations; Comprehensive Integrated Planning, Respect for Environment, Water Supply, and Demand Management. WISP Goals for each element are included in Appendix A.

COMPREHENSIVE INTEGRATED PLANNING (CIP)

WISP Goals

1. Encourage sustainable urban forms
2. Direct growth to suitable growth areas
3. Integrate land use and water resources planning
4. Growth should pay for itself over time and be financially sustainable

Tucson Water Service Area Policy (2.1)

The current Tucson Water service area policy is inconsistent with WISP goals and recommendations to “direct growth to suitable growth areas” and “take steps to encourage growth and new development in areas that are within or adjacent to the existing built environment, are outside of the conservation land system (CLS), and are identified as most suitable for development”. Unincorporated parcels have been denied water service in WISP designated “suitable growth areas” despite previous intent to serve.

The Tucson Water service area policy remains inflexible, allowing for exceptions to the policy that would “provide clear and substantial benefit to the region” but limits exceptions to the Primary Jobs Incentive Program and not other beneficial development such as low-income housing. Low-income development projects have been denied water service in WISP designated “suitable growth areas”.

Numerous County Administration memoranda have noted the inadequacy of the service area policy in disputing the need for and legitimacy of a differential water rate assessed to water customers in unincorporated Pima County.

Prior representation by the City, prior adopted policy, including joint policy adopted by the Board of Supervisors and the City of Tucson, endorse the concept of regional water and wastewater management, total basin-wide control of water allocation, specifically, management of total water resources of the Santa Cruz River Basin and adjacent basins as recited in policy documents and City-County agreements.

Based upon the City's prior representation, the City of Tucson received the largest municipal Central Arizona Project (CAP) water allocation in the state, received 90 percent of municipal effluent treated by the County's metropolitan wastewater reclamation facilities, purchased multiple private water companies, including isolated systems, and extended water service far beyond City limits with intent.

Pima County Regional Wastewater Reclamation Department (RWRD) is the regional wastewater provider, treating 97 percent of the county's wastewater and providing high quality reclaimed water for reuse.

RWRD produces for the City of Tucson 90 percent of metropolitan effluent, currently 26,000 acre-feet a year of Class A+ reclaimed water, at a cost of \$86 million and provides it to the City free of charge.

The County bears the full regulatory burden and financial cost in producing reclaimed water and gifts a volume of reclaimed water equivalent to 25 percent of Tucson Water's annual potable demand, contrary to established Arizona Supreme Court ruling determining utilities treating wastewater control the resulting effluent. Should City-County agreements be placed in question, this stipulation would be subject to reconsideration.¹

Pima County also facilitates the recharge of the City's reclaimed water by use of in-channel facilities on properties owned by the Regional Flood Control District, enabling the City of Tucson to meet its SAWRSA obligation.

Pima County subsidizes both the City of Tucson's CAP and reclaimed water supply and treatment, unincorporated areas paying more than 50 percent of CAWCD (CAP) property taxes, CAP fees assessed by Tucson Water, sales tax and other fees.

Despite disproportional benefit, the City adheres to a water service area policy detrimental, and now discriminatory, to unincorporated Pima County water customers.

Tucson Water Differential Water Rate (3.0)

City Mayor and Council directed staff to formulate differential rate options for Tucson Water customers in unincorporated Pima County beginning in January of 2021. The City's Citizen Water Advisory Committee (CWAC) considered the issue in February and March, drafting a letter to

¹ [Pima County Memorandum, Chief Deputy County Administrator to Board of Supervisors. "Chronology and Options Regarding City of Tucson Differential Water Rates". November 22, 2021.](#)

Mayor and Council recognizing a majority opinion against the adoption of a differential rate. Mayor and Council passed a Notice of Intent in April with a public hearing in June. The Board of Supervisors approved a resolution on April 6th affirming support for jurisdictional rate parity. CWAC sent another letter to Mayor and Council recommending deferment of the issue until further analysis. CWAC noted the differential rate proposal was not initiated in a normal rate setting process.

In June, the City Attorney informed the interim Tucson Water Director that the City process for adoption without a cost of service study was insufficient in complying with Arizona Supreme Court ruling. Mayor and Council responded by contracting with Raftelis for a cost of service study and on June 22 re-adopted a Notice of Intent with a public hearing October 19th. The County requested to be directly involved in the cost of service study.

In July, Raftelis delivered a first phase cost of service study for review and presented to CWAC. County Administration responded with a letter to CWAC in July and two memoranda in August. In September, the City released a second phase of the study, neglecting to address County concerns. The County Administrator again responded with a memorandum identifying deficiencies in the cost of service study.

Memoranda from the County Administrator in October defined the discriminatory nature of the differential rate and requested opinion from the County Attorney.

Mayor and Council repealed ordinance 11846 and adopted ordinance 11881 on October 19th enacting a differential rate supposedly supporting the policy decision with a cost of service study.

Rates increased for Tucson Water customers in unincorporated Pima County in December by 10-40 percent depending on tier. Rates did not increase for Tucson Water customers in other municipalities and districts in the same proximity to unincorporated customers subject to the rate increase.

The City of Tucson adopted a differential rate not on a cost basis, as stated by Tucson Water officials, but as a policy incentive for annexation, though CWAC noted the changing justifications as the process moved to cost of service study.

County Administration identified the following deficiencies with the cost of service study;

- Overall, the City's study failed to demonstrate an increased cost of service in unincorporated Pima County, selecting only those factors in support of the case for differential rates.
- Allocation of Tucson Water risk and debt does not meet criteria set by American Water Works Association in developing fair and equitable rates. In force majeure default, the City's general fund does not serve as a backdrop but the ratepayers, including unincorporated customers, of the enterprise fund that would repay any expenditure from the general fund.
- Lack of basis in applying private utility profit model to a municipal utility.
- Arbitrary selection of a 5 to 10 percent rate of return in the equity-based utility investment approach and inappropriately applying it to a municipal utility, which cannot be evaluated on the basis of cost of equity.

- Incorrectly assigns taxes to City customers only and excludes fees and taxes paid by unincorporated customers.
- Exclusion of Pima County subsidies of the City's potable and reclaimed water systems.
- Corrupts equity ownership concept by discriminatorily selecting "owners" and "non-owners" by including surrounding municipalities, tribes and the Tucson Unified School District as "owners" and adjacent unincorporated customers as "non-owners".
- Lacks evaluation of average customer elevation data due to significant costs associated with distribution from CAVSARP and SAVSARP well fields to east Tucson.
- No adjustment for comparison of inside/outside infrastructure, a majority of City well fields and recovery facilities that serve City customers are located in unincorporated Pima County and distribution systems serving municipalities transverse the unincorporated area. No exclusion of developer-financed infrastructure.
- At the September CWAC Finance subcommittee, consultant acknowledged selection of an unincorporated differential rate is strictly a policy decision for Mayor and Council based on artificial "returns" the City deems to receive.
- In summary, the City cost of service study found an artificial five percent differential in unincorporated areas, the City did not follow statutory procedures in adopting the differential rate ordinance and has not demonstrated a basis for such a rate with a valid cost of service study.

The Board of Supervisors approved the filing of a lawsuit in November and a Complaint for Declaratory and Injunctive Relief has been submitted to the Pima County Superior Court, moved to Maricopa County Superior Court.

City Water Service Area Review Board and Service Denials (2.1)

The City of Tucson's Water Service Area Review Board reviews service denials brought by appellants and considers each appeal, either upholding Tucson Water's denial of service or overturning the denial and directing Tucson Water to provide service.

In 2019, the City Review Board heard two appeals for residential service in the Northwest area which were denied. No appeals were heard in 2020. In 2021, the Board heard one appeal for residential service in the West unincorporated area which was denied.

In 2021, 358 request for residential and commercial water service in the unincorporated area were submitted to Tucson Water. In total, 97 residential/commercial requests, or 27 percent, were denied. A number of the denials were parcels with pre-annexation development agreements.

Regional Wastewater Reclamation Department Rates (2.2)

Pima County Regional Wastewater Reclamation Department (RWRD), following completion of the regulatory required Regional Optimization Master Plan in fiscal year 2013/14, has strived through

strategic investment and operational efficiencies to keep sewer rate increases at or below the rate of inflation.

Benchmarking RWRD with Tucson Water, a similarly sized utility with corresponding asset value and customer base, is useful in illustrating rate increase impacts. In the last eight years, RWRD has had only one rate increase approved following ROMP completion, whereas Tucson Water has increased rates each year. Indexing Tucson Water rate increases to RWRD sewer rates over the same period, RWRD ratepayers would have been charged an additional \$399 million.

The average monthly sewer residential bill is less than \$35.00, well below the state and national average. Other municipalities benefit from sales tax on utility fees and sale of reclaimed water. Pima County is not enabled to collect such a tax and gifts 90 percent of metropolitan effluent to the City of Tucson. Factoring in these two considerations, Pima County could be collecting an additional \$17.2 million a year in revenue. Despite these disadvantages, RWRD has been able to maintain low rates for ratepayers, meet regulatory requirements and continue providing and planning for the best use of reclaimed water into the future.

RESPECT FOR ENVIRONMENT

WISP Goals

1. Preserve existing riparian areas through coordinated regulation, policy and outreach
2. Identify needs and opportunities for future restoration
3. Ensure that public projects are multi-benefit including restoration, stormwater management, recharge and public amenity
4. Ensure the future of riparian and aquatic habitat along the effluent-dependent reach of the Santa Cruz River
5. Develop water supply for the environment

Lower Santa Cruz River Management Plan (4.2)

The Santa Cruz River Management Plan – Grant Rd to Pinal County was developed by Pima County Regional Flood Control District (RFCD) to manage the effluent dependent river while balancing flood risk and infrastructure protection with aquifer recharge, riparian habitat preservation, public safety and recreation.

In developing the Plan, RFCD has led a robust stakeholder and public participation process with representatives from the jurisdictions located within the Plan boundaries, Grant Road to Pinal County. A stakeholder Alternative Working Group assisted in identifying alternative projects for each specific reach of the river through a Multi-Criteria Decision Assessment framework that determined sequence and funding of the 20 projects selected from 110 possible. RFCD participated with the Sonoran Institute in community outreach and received over 500 responses from an online public survey.

RFCD has developed a comprehensive plan, benefiting all jurisdictions, enabling RFCD to manage the Santa Cruz River in a consistent manner and meeting the WISP goal of ensuring the future of the riparian habitat.

Phase 1 RFCD work products include; [1\) Existing Conditions Report](#), [2\) Infrastructure Assessment and Maintenance Evaluation Report](#) and [3\) Technical Data Support Notebook](#).

Phase 2 RFCD work products include; [1\) Alternatives Selection Report](#), [2\) Implementation Plan](#) and [3\) Summary Report](#).

Living River Report WY2020 (1.1)

This [annual report](#) documents the improved water quality released into the Lower Santa Cruz River and resultant benefits. Water quality in the river improved following significant upgrades of the County's wastewater treatment facilities. A [supplemental report](#) compares annual report conditions from 2013 through 2020.

The length of the Santa Cruz River from Agua Nueva outfall to Trico Road is 23 miles. In 2013, flow was continuous for the entire reach. The extent of flow below Agua Nueva is spot-checked in June, before monsoon season, and has been found not reaching the Tres Rios outfall, south of Ina Road, in most years following the upgrades, although flows reached Tres Rios outfall in 2021. The extent of flow varies on almost an hourly basis depending on how much reclaimed water Tucson Water is directing to the reclaimed water system from the Agua Nueva WRF at a given time. Following the facilities upgrades, flow from the Tres Rios outfall would oftentimes not reach Trico Road, but from 2018 to 2021 the river flowed at Trico Road continuously, except for about two months in 2018. It is thought that a decrease in storm events that remove settled fines was the reason. Following the record monsoons in 2021, it is possible that ash may have resulted in the deposition of less permeable sediments in the river, resulting in decreased infiltration rates and more flow at Trico Road. The ash, contained in stormwater runoff, is from burn areas in the Santa Catalina Mountains from the 2020 Bighorn Wildfire.

In 2020, a 0.20-mile dry segment was measured at the end of the Agua Nueva stretch (Three Rivers Reach). Flow extent and outflow from Trico has been increasing, indicating the recharge rate has stabilized or may be decreasing. For the first time since 2013, flow past Trico has been continuous throughout the year. This means less flow is recharging the aquifer in Pima County.

As for water quality, ammonia levels remain significantly lower following upgrades, samples meeting a variable threshold 73 percent of the time. Elevated levels of ammonia are occasional measured in proximity to both Agua Nueva and Tres Rios wastewater reclamation facilities. Dissolved oxygen remains stable, all samples meeting the established water quality standard.

The number of fish and aquatic species has increased throughout the Santa Cruz River. The Gila topminnow, found in 2017, has expanded its reach downstream past the Tres Rios outfall. Five additional non-native fish species have now been documented. Aquatic invertebrates have increased in diversity. The decreased flow observed during previous Living River water year reporting periods has diminished overall mature tree cover as measured by basal area and percent canopy cover.

The Living River Report is funded by the Regional Wastewater Reclamation Department and the Regional Flood Control District, in cooperation with the Sonoran Institute.

Conservation Effluent Pool (5.1)

A Conservation Effluent Pool (CEP) of reclaimed water was established by Pima County and the City of Tucson in the 2000 Supplemental Intergovernmental Agreement. CEP cooperators, Pima County, the City of Tucson, local water providers and the Regional Flood Control District, may apply for and use up to 10,000 acre feet a year, total, for riparian projects. An Implementing Agreement was approved in 2011; projects require authorization from the CEP Administrators (County and City) and approval by the Board of Supervisors and Mayor and Council. Riparian projects subject to Endangered Species Act (ESA) compliance require authorization only from the CEP Administrators.

In 2017, the endangered Gila topminnow was found in the Lower Santa Cruz River downstream of the Agua Nueva outfall. The Regional Flood Control District submitted an ESA project application for CEP water in 2020 to secure a minimum level of flow, 5,600 acre-feet a year, to maintain the river from the Agua Nueva outfall and prevent periods of low discharge. The project was authorized in 2021 and CEP water will be delivered in 2022.

In 2019, the City of Tucson submitted an application for the City's Santa Cruz Heritage Project, a non-ESA project, which was found incomplete. A revised application was approved in 2021 and 110 acre-feet a year was allocated to maintain riparian habitat. CEP water will be delivered in 2022.

Managed Effluent Recharge (5.0)

The Arizona 54th State Legislature passed and the Governor signed Senate Bill 1227 and Senate Joint Resolution 1001 implementing the Drought Contingency Plan. As part of the intra-state plan, existing managed effluent recharge projects now receive 95 percent credit for effluent volumes recharged at these projects. The Lower Santa Cruz Managed Recharge Project, the Santa Cruz River Managed Underground Storage Facility and the Santa Cruz River Heritage Project are defined as existing projects and will receive 95 percent credit. This means long term storage credits for 95 percent of the effluent infiltrating within the project boundaries will accrue to the entities storing water in these managed recharge projects. The accrual rate was previously 50 percent. New projects will only receive 50 percent credit.

The Regional Wastewater Reclamation Department supports and proposes state legislation that would allow all new managed effluent recharge projects to accrue 95 percent credit. As multi-decadal drought continues and Arizona's Colorado River water supplies are reduced, competition for reclaimed water end use will increase. In-channel effluent recharge in existing streambeds is a multi-benefit project, as recognized by ADWR, providing aquifer replenishment and water to sustain riparian habitat. Current state law creates a disincentive for new in-channel effluent recharge projects, limiting a water supply for the environment during increasing water scarcity and competition.

WATER SUPPLY

WISP Goals

1. Work collaboratively to acquire new water supplies for reliability
2. Maximize and make efficient use of effluent and other locally renewable water supplies
3. Address regulatory barriers to maximizing local supplies
4. Foster increased use of reclaimed water
5. Be prepared for climate change and drought

2020 RWRD Effluent Generation and Utilization Report (2.0)

The Regional Wastewater Reclamation Department (RWRD) produces approximately 60,000 acre feet (20 billion gallons) of effluent annually at eight water reclamation facilities (WRF). The effluent is treated to reclaimed water standards and put to beneficial use through direct reuse in Tucson Water’s reclaimed system. It also contributes to aquifer replenishment in underground storage facilities and environmental restoration projects.

In 2020, RWRD produced 61,497 acre-feet (af) of effluent, 57,390 af at metropolitan facilities and 4,107 af at non-metropolitan facilities.

Pima County’s share of metropolitan effluent was 2,919 acre-feet: The County utilized 1,338 acre-feet for reclaimed system use on county parks, 512 acre-feet was delivered to the Lower Santa Cruz River Managed Recharge Project (LSCRMRP) and 623 acre-feet was delivered to Marana High Plains Effluent Recharge Project (MHPERP).

Pima County earned 3,077 acre-feet of long term storage credits. The following facilities earned long term storage credits in 2021:

Metropolitan Facilities		Non-Metropolitan Facilities	
Lower Santa Cruz River Managed Recharge Project	288 af	Avra Valley WRF	1,563 af
Marana High Plains Effluent Recharge Project	600 af	Corona de Tucson WRF	412 af
		Green Valley WRF	215 af
Total	888 af		2,190 af

LDIG Drought and Climate Update (5.0)

The Pima County Local Drought Impact Group (LDIG) held five meetings in 2021. An advisory board to the County Administrator and Board of Supervisors, numerous federal, state and local agencies and departments participate in monitoring the extent and severity of drought and resultant impacts

in Pima County. The National Weather Service and Central Arizona Project routinely present on winter and monsoon weather data and Colorado River and Lake Mead conditions, respectively.

LDIG submits an annual drought report of drought conditions in Pima County to the Arizona Department of Water Resources (ADWR) for inclusion in the state's Arizona Drought Preparedness Annual Report. The 2021 Pima County LDIG Drought Report can be found on [LDIG's website](#).

Lower Santa Cruz River Basin Study (5.2)

The Lower Santa Cruz Basin Study is a US Bureau of Reclamation study led by the Bureau and local cost share partners Southern Arizona Water Users Association, of which Pima County Regional Wastewater Reclamation Department is a member, Arizona Department of Water Resources, Central Arizona Water Conservation District, Pima Association of Governments, Cortaro-Marana Irrigation District and the University of Arizona. The six-year study identified supply-demand imbalances requiring adaptation through 2060 and developed strategies to improve water reliability for water use sectors in the study area, the Tucson Active Management Area.

Projected supply-demand imbalances were calculated based upon a comprehensive scenario planning process, with climate model, service area, surface water model and groundwater model inputs. Future changes in annual average temperature and precipitation were incorporated in best and worse-case climate scenarios, facilitating a simulation of surface water and groundwater impacts. The study added slow, compact growth and rapid, outward growth scenarios for six climate-growth scenarios. Using the Central Arizona Project Service Area Model, model runs of the climate-growth scenarios for the Tucson Active Management Area's 26 water providers produced water supply projections for each water provider and in aggregate. Having concluded the scenario planning process, adaptation strategies were developed for determined imbalances.

Technical memoranda have been completed or are pending and the final report is due in 2022.

The study has identified four areas of concern; Canada del Oro/Saddlebrooke, Sabino Canyon/Tanque Verde, Southeast Tucson, and Green Valley and developed three adaptation strategies for each area of concern as well as region wide strategies. Reclamation expects to publish the final report later this year.

PFAS and Water Quality (2.3)

The cluster of industrial chemicals, per- and polyfluoroalkyl substances (PFAS), are widely used, long-lasting synthetic compounds disbursed worldwide and found in water and wastewater systems across the country. Studies indicate harmful health effects in humans and animals, though a full understanding of PFAS health and environmental impacts has not been reached. The U.S. Environmental Protection Agency (EPA) has established a non-regulatory health-based guidance level of 70 part per trillion (ppt) for both perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS).

The EPA health-based guidance level of 70 ppt is for drinking water. There are no similar advisories for wastewater or soils, though RWRD has applied this standard in analyzing influent and effluent

from its wastewater reclamation facilities (WRF). Both influent and effluent sampled in 2016 and 2018 from metropolitan and non-metropolitan WRF's tested below the advisory level, averaging 6.3 ppt for PFOS and 10.1 ppt for PFOA. Further sampling of surface water in the Santa Cruz River and groundwater along the river tested below the advisory level.

PFAS has been detected in Tucson Water, Metro Water and Marana Water wells and generally in local groundwater in varying concentrations from 12 to 13,000 parts per trillion. Four water treatment plants began operating in 2021 to remove PFAS from groundwater.

Agricultural lands that have received biosolids have small amounts of PFAS ranging from 2ppb to 4 ppb. Approximately 90 percent of PFAS is attenuated within 6 feet of the soil. Groundwater depths are typically 150-200 feet in the region thus groundwater contamination from biosolids is highly unlikely. The minimal accumulation of PFAS in soils also make air source contamination improbable.

Pima County commissioned two studies to arrive at said conclusions, *Environmental Toxic Substance Assessment: Per- and Polyfluoroalkyl Substances (PFAS) in Pima County Water* and *PFAS in Biosolids - A Southern Arizona Case Study*.

The EPA released a strategic roadmap to address PFAS contamination in October 2021. The EPA plans to set drinking water limits under the Safe Drinking Water Act and designate PFAS a hazardous material under the Superfund law. Congress must still consider legislation that sets a national drinking water standard for certain PFAS chemicals and clean up at military bases across the nation.

Under the plan, the EPA will issue new guidance to leverage state-issued NPDES permits that will include monitoring requirements for 40 specific PFAS chemicals at facilities expected or suspected of having PFAS present in wastewater discharge. The EPA will be recommending a full suite of permitting approaches used in federally issued permits such as pretreatment programs and best management practices to protect wastewater treatment plant discharge and biosolid application.

Additional actions include restricting PFAS discharge from industrial sources through the Effluent Limitations Guidelines program and finalizing a risk assessment for PFAS in biosolids.

City of Tucson TARP (2.3)

The City's Tucson Airport Remediation Project (TARP) has been treating groundwater from wells near the Tucson International Airport for the contaminants TCE and 1,4 dioxane and more recently PFAS and delivering the groundwater to 60,000 Tucson Water customers after the removal of said contaminants. Due to rising levels of PFAS and concerns the levels of PFAS could overwhelm the operation of the TARP facility and compromise the potable water system, the City shutdown the TARP facility in June to safeguard the potable water supply.

The Arizona Department of Environmental Quality (ADEQ) subsequently announced a \$2 million grant to the City to bring the facility back online by building a temporary pipeline to release treated water into the Santa Cruz River at Irvington Road. The City is planning a permanent pipeline to outfall into the Santa Cruz River, which will discharge up to 2 million gallons a day (MGD); and

a permanent connection to the reclaimed water system, which would deliver up to 10 MGD to that system. A full-scale plant to remove PFAS is expected in the future.

The Department of Defense in cooperation with ADEQ is conducting a full scale remediation pilot project north of Davis Monthan Air Force Base to clean up PFAS contamination. Aqueous fire-fighting foam at both locations is considered the source. The Bipartisan Infrastructure Law signed by President Biden in November 2021 will provide about \$72 million annually in federal funding for five years to clean up PFAS in Arizona.

The Arizona Department of Environmental Quality (ADEQ) issued the City of Tucson an AZPDES permit in November allowing discharges into the Santa Cruz River of remediated groundwater from TARP containing up to 70 ppt of PFAS. Pima County had urged ADEQ to impose a discharge limit of 18 ppt for PFAS/PFOA, but ADEQ contends it does not have legal authority to assign limits below the EPA health advisory level.

The addition of up to 10 MGD of treated groundwater into the reclaimed water system from TARP will decrease the volume of reclaimed water taken from the Agua Nueva WRF, which will in turn increase the amount of effluent released into the Santa Cruz River Managed Underground Storage Facility (SCRMUSF). Some of this water will flow out of the SCRMUSF and increase the volume of effluent flowing into the Lower Santa Cruz River Managed Recharge Project.

Water Augmentation - Desalination Import (1.0)

To evaluate options and to contribute to the mitigation and adaptation strategies identified in the Lower Santa Cruz River Basin Study, Pima County completed a conceptual analysis of the financing, construction and operation of a desalination plant and pipeline importing water from Mexico to Avra Valley recharge facilities.

The report considers the possibility that a new regional water supply may be required in response to extreme climate change impacts that eliminate Colorado River water supplies to the state and reduce local average precipitation to six inches annually, a decrease of 43 percent from normal. By 2100, to serve a projected population of 1.5 million without any CAP water supply, the County calculates a net water demand deficit of 90 million gallons a day, or 100,813 acre-feet a year, that could be mitigated with desalinated sea water.

The analysis relied on the published reports of the International Boundary and Water Commission with extensive use of the *Binational Study of Water Desalination Opportunities in the Sea of Cortez* completed in 2020 by the Minute 323 Desalination Work Group. This study reviewed options for a desalination plant in the Sea of Cortez transporting water to the Morelos Dam (near Yuma, Arizona) for use by Mexico in exchange for Colorado River water diverted to US water users upstream.

Infrastructure for the County concept includes a desalination plant at Puerto Libertad, Mexico, a 196-mile pipeline to Avra Valley, and five pump stations.

Construction costs are estimated at \$4.1 billion, the analysis assuming a 50 percent federal cost share with debt repayment over 50 years, similar to CAP federal assistance. Construction costs for the County and regional partners reduced to \$2.05 billion, the annual construction debt payment

is estimated at \$103.6 million. Combined with \$171.8 million in annual operation and maintenance costs, total annual cost is estimated to be \$275.5 million, or approximately \$60 per month for each single family end user.

The County's concept is a "wet" water approach that delivers a substantial new physical water supply as opposed to "paper" water that is traded through exchange and may not be physically available on demand. The probability of deeper CAP shortages continues to increase and there is a possibility that the reservoir system could reach dead pool before any desalination project could be completed. Additionally, a water exchange to upstream users would affect downstream uses as flows would decrease within the Colorado River and to the Delta. Shifting of water resources through exchange is not equivalent to direct delivery of a new water supply to end users.

Federal Infrastructure Investment and Jobs Act (1.0)

The federal Infrastructure Investment and Jobs Act (IIJA, aka BIL) was signed into law in November 2021 providing \$1.2 trillion to the states with \$5.3 billion apportioned to Arizona. Rulemaking for the various funding programs will continue into 2022.

The Western Water Infrastructure section of the IIJA funds \$8.3 billion in new infrastructure and improvements across the western states and Colorado River Basin system. Included in the Act:

- Title XVI water recycling grants, \$1 billion; \$450 million for large-scale water recycling projects.
- Bureau of Reclamation WaterSMART grant program, \$400 million; existing program operated by the Bureau of Reclamation (BOR), funds various grants from small-scale efficiency to larger reliability projects and environmental water resources.
- Water storage, groundwater storage and conveyance, \$1.15 billion.
- Bureau of Reclamation desalination project grants, \$250 million.
- Lower Basin Drought Contingency Plan, \$250 million.
- Bureau of Reclamation Aging Infrastructure Account, \$3.2 billion; 150 projects in Arizona to improve water efficiency.
- Indian Water Rights Settlements, \$2.5 billion; tribal water infrastructure projects, includes the Tohono O'odham Nation.

The Drinking and Wastewater section totals \$55 billion with \$10 billion dedicated to PFAS remediation and cleanup, \$250 million funds public water and wastewater systems investment in drought resiliency, climate change and cybersecurity protection measures.

Key funding for Arizona includes:

- EPA Clean Water State Revolving Loan Fund, \$79.6 million annually.
- EPA Drinking Water State Revolving Loan Fund, \$210.8 million annually.
- EPA Alternative Water Resource Projects, \$125 million; water, wastewater and stormwater reuse and groundwater recharge.

Pima County is actively pursuing this historic funding opportunity. Staff leads have been assigned and are reviewing federal requirements for funding, monitoring rulemaking processes and organizing project lists by priority and feasibility.

Additional Reclaimed Water Use (4.0)

Reclaimed water lines have been bored under Interstate 10 from Kino Sports Complex-North to provide water to the Kino South Sports and Entertainment Complex south of Interstate 10. The system is now operational and delivering a blend of reclaimed water and harvested stormwater from the Kino Environmental Restoration Project (KERP). KERP collects stormwater for irrigation at both the north and south complexes, reducing the demand for reclaimed water. Reclaimed demand ranges from zero acre-feet in wet years to 400 acre-feet.

Pima County RWRD is delivering reclaimed water directly from the Tres Rios WRF to Mike Jacobs Sportspark, bypassing the Tucson Water reclaimed water system. The system became operational in 2019 with limited delivery but now provides approximately 30 acre-feet a year of reclaimed water for recreational turf previously irrigated with groundwater.

Pima County will continue to explore other opportunities to increase the prioritized use of reclaimed water. The establishment of a regulatory program for the direct potable reuse implemented by the Arizona Department of Environmental Quality is pending in the state legislature. It would allow the County and water providers to recycle water into a new potable source. Direct potable reuse efforts will address regulatory barriers to maximize the use of effluent augmenting water supply to increase water reliability for the region, a culmination of WISP Water Supply goals.

DEMAND MANAGEMENT

WISP Goals

1. Increase the effectiveness of conservation programming through coordinated planning and evaluation
2. Establish common water conservation goals and targeted methods
3. Manage demand through the design of the built environment
4. Manage demand through changing behaviors
5. Increase the use of rainwater and stormwater

Sustainability Action Plan for County Operations (2.1)

Pima County adopted the Sustainable Action Plan for County Operations (SAPCO) in 2008, integrating sustainability goals with County operations such as facility and fleet maintenance, purchasing and land and water conservation. SAPCO was updated and a new action plan adopted in 2014 and 2018. The 2018 SAPCO aligned County sustainability programming with the Paris Climate Agreement. In 2020, the SAPCO Baseline Sustainability Report set benchmarks to monitor, measure and evaluate the County's performance over the duration of the 2018-2025 SAPCO programming period. The County's baseline performance for new SAPCO targets include water

resource policies and programs to reduce the intensity of potable water use in County operations and continue allocating reclaimed water for groundwater recharge.

The FY 2019/2020 SAPCO Annual Report documented a 25 percent increase in potable water use by County facilities in comparison to the previous year. Departments are investigating the increased use and reviewing the data collected by the County's utility management database, EnergyCAP. As for groundwater recharge, the County increased the volume of reclaimed water recharged by 24 percent, from 2,563 acre-feet the previous year to 3,184 acre-feet this year.

RFCD Urban Stormwater Resource Workplan (5.0)

In an effort to improve overall regional water resiliency, the Regional Flood Control District (RFCD) has developed a workplan to expand the beneficial use of urban stormwater and increase aquifer recharge. The plan was sent to the BOS on September 9, 2021.

Pima County policy currently requires retention of the first 0.5 inches of runoff from new development, regulates riparian habitat disturbances and requires new development to inventory available water resources and mitigate estimated water demand at rezoning. RFCD has proposed that this be increased to 1 inch. Capital projects range from regional, neighborhood and lot scale such as Kino Environmental Restoration Project (KERP), Seneca Basin and small projects along the Chuck Huckelberry Loop. RFCD also initiated an Intergovernmental agreement (IGA) to construct stormwater harvesting basins in parks being renovated as part of the City of Tucson proposition 407 projects.

As part of the workplan, RFCD can calculate stormwater runoff from impervious surface in developed urban areas in comparison to stormwater runoff that would naturally occur in the same area if undeveloped, considered a new water source, and request surface water rights from the Arizona Department of Water Resources. Based on the amount of calculated new water in each watershed, RFCD can further analyze and prioritize stormwater harvesting projects. RFCD has identified limitations to this regional approach.

Retrofitting of existing flood control infrastructure is another option in harvesting stormwater at expanded storage facilities for irrigation uses at nearby athletic fields and parks, such as KERP or Massingale Retention Basin.

Neighborhood and lot scale projects are more feasible given area needed for regional basins, however, such projects would not be creditable for surface water rights but offer other Low Impact Development/Green Infrastructure benefits such as creating increased urban tree canopy without increased water demand, reduced heat island effect, improved water quality and reduced cooling costs.

The Southeast Employment and Logistics Center (SELC) offers an opportunity for RFCD to master plan a comprehensive drainage conveyance, detention and retention urban stormwater harvesting system as part of the development process and improvement of Houghton Road. It is possible for the County to file for surface water credits once infrastructure is in place.

Finally, RFCD has evaluated in-channel regional watercourses and found high transmissivity rates suitable for large scale recharge projects. In-channel improvements will increase recharge potential

of both effluent and stormwater. An additional benefit is the restoration of enhanced ecosystem services.

The RFCD Workplan is a region-wide approach to increase water resiliency. Water resiliency could be improved by evaluating new large-scale retention projects, expansion of existing infrastructure, and decentralized retention strategies at the neighborhood and lot scale. RFCD is beginning a stakeholder process to modify and improve drainage criteria for new development, maximizing retention and reuse of stormwater at SELC with potential new regional basins and considering opportunities to enhance reclaimed water in channel recharge.

Low Impact Development/Green Infrastructure (LID/GI) Update (5.2)

Sustainability activities in Pima County operations include planting trees and installing green infrastructure projects as well as the use of non-potable water. The County has planted 4,409 trees out of the 10,000-tree goal and added 27.4 acres of green infrastructure projects out of the 40-acre goal. The RFCD installed 34.1 acres of restoration projects that use non-potable water for landscape irrigation.

Post-construction controls in the recently approved Pima County AZPDES Municipal Separate Storm Sewer System (MS4) permit require retrofits to existing stormwater structures to address urban runoff from developed sites. RFCD is developing a feasibility assessment to evaluate the stormwater pollutant control measures, feasibility, cost, landowner cooperation, and the expected improvement of the water quality in three areas. An inventory of potential retrofit sites is being prioritized to address a particular water quality issue. Control measures under consideration include bioretention, detention basins, sand filters, and non-asphaltic permeable pavement. Additional guidance documents to be used during the installation of retrofits include the 2015 Pima County Design Standards for Stormwater Detention and Retention, which includes the LID/GI standards and references, and the 2015 Low Impact Development and Green Infrastructure Guidance Manual.

###

APPENDIX A
WISP ELEMENT GOALS

The Action Plan contains four elements, each with programs, goals, recommendations and action items to implement the recommendations:

- Comprehensive Integrated Planning (CIP) Programs
 - General and Comprehensive Plan Updates
 - Smart Growth Tools and Regulations
 - Linking Water and Land Use Planning
- Respect For Environment (RFE) Programs
 - Collaboration for Environmental Restoration
 - Preservation and Protection of Riparian Areas
 - Multiple Benefit Capital Improvement Projects
 - Lower Santa Cruz River Management Plan
- Water Supply (WS) Programs
 - Water Supply and Water Quality
 - Effluent Management
 - Regulatory/Policy Advocacy
 - Drought Preparedness
- Demand Management (DM) Programs
 - Planning and Evaluation
 - Consistent Standards and Guidelines
 - Education and Outreach

ELEMENT GOALS

Comprehensive Integrated Planning

1. Encourage sustainable urban forms
 - 1.1. Require and encourage smart growth principles
2. Direct growth to suitable growth areas
 - 2.1. Encourage growth in four suitable growth areas, existing built environment
 - 2.2. Link capital planning and land use planning, direct investment to growth areas
 - 2.3. Acquire open space to define desired growth areas
 - 2.4. Conduct regional growth scenario modeling
3. Integrate land use and water resources planning
 - 3.1. Conduct comprehensive water resource planning outside obligated service area
 - 3.2. Consider obligated service area expansion based on 3.1 analysis and criteria
 - 3.3. Track resources for new development based on County Water Element, City Checkbook
 - 3.4. Pursue wheeling and recharge agreements
 - 3.5. Work regional solutions to address hydrological pumping and recharge disconnect
4. Growth should pay for itself over time and be financially sustainable
 - 4.1. Ensure fiscal sustainability of new development
 - 4.2. Ensure growth continues to pay for itself in water and wastewater financial planning

Respect For Environment

1. Preserve existing riparian areas through coordinated regulation, policy and outreach
 - 1.1. Continue preservation through acquisition, regulation, education and outreach
 - 1.2. Address non-exempt wells and surface water diversions affecting riparian areas
2. Identify needs and opportunities for future restoration
 - 2.1. Develop regional policy on regulatory compliance projects
 - 2.2. Collaborate regionally on riparian restoration
 - 2.3. Work with ADEQ on water quality standards for habitat restoration
3. Ensure that public projects are multi-benefit
 - 3.1. Pursue multi-benefit public projects using reclaimed water
 - 3.2. Pursue stormwater management opportunities in impervious surface areas
4. Ensure the future of habitat along the effluent-dependent reach of the Santa Cruz River
 - 4.1. Advocate allowance of full recharge credits for Secretary of Interior effluent
 - 4.2. Develop a Lower Santa Cruz River Management Plan
 - 4.3. Build on pilot restoration projects, develop portfolio of multi-purpose projects
 - 4.4. Incorporate in-channel and off-channel recharge facilities
5. Develop water supply for the environment
 - 5.1. Finalize Conservation Effluent Pool IGA
 - 5.2. Link water conservation to environmental preservation, restoration

Water Supply

1. Work collaboratively to acquire new water supplies for reliability
 - 1.1. Maximize opportunities to acquire (additional) water supplies through regional cooperation
 - 1.2. Acquire additional supplies to buttress Tucson Water's CAP allocation for obligated service area
 - 1.3. Consider all costs and benefits in acquisition of new supplies
2. Maximize and make efficient use of effluent and other locally renewable water supplies
 - 2.1. Balance use of effluent – reclaimed, aquifer recharge and environment
 - 2.2. Continue ROMP improvements
 - 2.3. Maintain water quality
 - 2.4. Evaluate reclaimed expansion for efficiency and overall water resource portfolio
 - 2.5. Evaluate graywater expansion
 - 2.6. Encourage rainwater harvesting
3. Address regulatory barriers to maximizing local supplies
 - 3.1. Address groundwater credits to provide incentives to convert to reclaimed
 - 3.2. Move to Class A+ water for the reclaimed system
 - 3.3. Work with ADEQ and ADWR on water quality standards for riparian projects
4. Foster increased use of reclaimed water
 - 4.1. Expand financing options
 - 4.2. Maintain private payer and explore pricing incentives to encourage conversion
 - 4.3. Lower operating cost through efficiencies
 - 4.4. Consider reclaimed water in new developments
 - 4.5. Consider other use of reclaimed water for municipal and environmental supply needs
 - 4.6. Increase amount of effluent dedicated to reclaimed
 - 4.7. Attract additional reclaimed customers based on efficiency considerations and benefits
5. Be Prepared for climate change and drought
 - 5.1. Continue multi-pronged planning approach
 - 5.2. Use scenario planning

Demand Management

1. Increase the effectiveness of conservation programming through coordinated planning and evaluation
 - 1.1. Collect uniform data on water use patterns to identify conservation potential
 - 1.2. Use triple bottom line cost/benefit analysis to improve conservation planning
 - 1.3. Employ adaptive planning approach for drought preparedness
2. Establish common water conservation goals and targeted methods
 - 2.1. Establish regional, measurable water efficiency and conservation goals
 - 2.2. Develop regional water conservation approaches
3. Manage demand through the design of the built environment
 - 3.1. Review development regulations for consistency and improved potable water conservation
4. Manage demand through changing behaviors
 - 4.1. Gather public input regarding quality of life trade-offs associated with water efficiency
 - 4.2. Advance regional approach to conservation education, communication, pilot projects and training
5. Increase the use of rainwater and stormwater
 - 5.1. Develop design guidelines for neighborhood stormwater harvesting
 - 5.2. Analyze expanded water and stormwater harvesting potential and benefits