Region L
South Central Texas Regional Water Planning Group

c/o San Antonio River Authority
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San Antonio, Texas 78204
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DATE: Friday, February 14, 2020

TO: Members of the South Central Texas Regional Water Planning Group

FROM: Caitlin Heller

The schedule and location of the meeting of the South Central Texas Regional Water Planning Group is as follows:

TIME AND LOCATION

Thursday, February 20, 2020
9:30 a.m.
San Antonio Water System
Customer Service Building
Room CR C145
2800 US Highway 281 North
San Antonio, Bexar County, Texas 78212

Enclosed is a copy of the posted public meeting notice.

Caitlin Heller

Enclosure

Agenda Packet for February 20, 2020

NOTICE OF OPEN MEETING OF THE
SOUTH CENTRAL TEXAS REGIONAL
WATER PLANNING GROUP

TAKE NOTICE that a meeting of the South Central Texas Regional Water Planning Group as established by the Texas Water Development Board will be held on Thursday, February 20, 2020, at 9:30 AM at San Antonio Water System (SAWS), Customer Service Building, Room CR 145, 2800 US Highway 281 North, San Antonio, Bexar County, Texas. The following subjects will be considered for discussion and/or action at said meeting.

1. (9:30 AM) Roll-Call
2. Public Comment
3. Approval of the Minutes from the January 23, 2020 Meeting of the South Central Texas Regional Water Planning Group (SCTRWPG)
4. Status of Edwards Aquifer Habitat Conservation Plan (EAHCP), Scott Storment
5. Status of Guadalupe, San Antonio, Mission, and Aransas Rivers and Mission, Copano, Aransas, and San Antonio Bays Basin and Bay Stakeholder Committee (BBASC) and Expert Science Team (BBEST)
6. Texas Water Development Board (TWDB) Communications
7. Presentation of the Socioeconomic Impact Report by TWDB
8. Chair's Report
9. Discussion and Appropriate Action Regarding the Consultant's Work and Schedule
10. Presentation of the Cumulative Effects Analysis
11. Discussion Regarding Comments Received to Date on the Region L Water Plan Chapters
12. Discussion and Appropriate Action to Adopt and Submit 2021 Initially Prepared Plan (IPP) and Authorization for the Consultant to Address Any Planning Group Changes to the IPP Document Prior to Submitting to the TWDB
13. Discussion and Appropriate Action Authorizing the Consultant to Submit the 2021 Initially Prepared Plan on Behalf of the South Central Texas Regional Water Planning Group (SCTRWPG) by March 3, 2020
14. Discussion and Appropriate Action to Authorize the San Antonio River Authority to Post the Initially Prepared Plan Public Hearing Notice
15. Discussion and Appropriate Action Setting the Schedule for Calendar Year 2020 Meetings
16. Possible Agenda Items for the Next Region L Meeting
17. Public Comment

2. Public Comment

3. Approval of the Minutes from the January 23, 2020, Meeting of the South Central Texas Regional Water Planning Group (SCTRWPG)

Minutes of the
South Central Texas Regional Water Planning Group

January 23, 2020

Chair Scott called the meeting to order at 9:30 a.m. in the San Antonio Water System's (SAWS) Customer Service Building, Room CR 145, 2800 US Highway 281 North, San Antonio, Bexar County, Texas.

25 of the 31 voting members, or their alternates, were present.

Voting Members Present:
Tim Andruss
John Byrum
Curt Campbell
Rey Chavez
Alan Cockerell
Charlie Flatten
Kevin Janak
Russel Labus
Glenn Lord
Dan Meyer
Gary Middleton
Tommy Hill for Kevin Patteson
Robert Puente
Humberto Ramos
Steve Ramsey
Blaine Shorpe for Weldon Riggs
Roland Ruiz
Dianne Savage
Suzanne Scott
Greg Senglemann
Mitchell Sowards
Heather Sumpter
Thomas Taggart
Dianne Wassenich
Adam Yablonski

Voting Members Absent:
Pat Calhoun
Will Conley
Vic Hilderbran
Tom Jungman
Iliana Pena
Ian Taylor

Non-Voting Members Present:
Elizabeth McCoy, Texas Water Development Board (TWDB)
Jami McCool, TX Dept. of Agriculture

Non-Voting Members Absent:
Ronal Fieseler, Region K Liaison
Iliana Delgado, TCEQ
Don McGhee, Region M Liaison
Marty Kelly, TX Department of Parks and Wildlife
Joseph McDaniel, Region J Liaison
Carl Crull, Region N Liaison
Rusty Ray, Texas Soil & Water Cons. Board

Beginning with the February 11, 2016, meeting of the South Central Texas Regional Water Planning Group, all recordings are available for the public at www.regionltexas.org.

AGENDA ITEM NO. 1: (9:30 AM) ROLL CALL

Hillary Lilly, San Antonio River Authority, called the role, and confirmed a quorum

AGENDA ITEM NO. 2: PUBLIC COMMENT

No public comment.

AGENDA ITEM NO. 3: APPROVAL OF THE MINUTES FROM THE NOVEMBER 7, 2019, MEETING OF THE SOUTH CENTRAL TEXAS REGIONAL WATER PLANNING GROUP (SCTRWPG)

Ms. Wassenich moved for the approval of the minutes. Mr. Andruss seconded the motion. The minutes were approved.

AGENDA ITEM NO. 4: ELECTION OF OFFICERS

Ms. Scott asked for nominations or interest in a change in officer positions for the upcoming year. Ms. Wassenich suggested that the planning group continuing with the current officers through the duration of the plan for continuity. She then moved for the officers to remain the same and the motion was seconded by Ms. Savage. The planning group then approved the officers to continue in their roles.

AGENDA ITEM NO. 5: STATUS OF EDWARDS AQUIFER HABITAT CONSERVATION PLAN (EAHCP), SCOTT STORMENT

Mr. Storment informed the group that the EAHCP is starting a process of rollover option analysis, which is a managerial tool to provide guidance to stakeholder committees. This rollover is a concept that will be used as their permit is coming to an end and move to a second permit. Mr. Storment told the group he would provide updates on the progress of the rollover options analysis in the following Region L meetings.

Ms. Wassenich informed the group that the EAHCP has a newsletter that would be very informational to the planning group members. She recommended that the group sign up to receive it. She mentioned that there would be an HCP conference in Austin, Texas in the Fall of 2020 that would be beneficial to attend. Ms. Scott recommended that the EAA add the planning group members to the list. Mr. Ruiz will work with Mr. Storment to make that happen.

AGENDA ITEM NO. 6: STATUS OF GUADALUPE, SAN ANTONIO, MISSION, AND ARANSAS RIVERS AND MISSION, COPANO, ARANSAS, AND SAN ANTONIO BAYS BASIN AND BAY STAKEHOLDER COMMITTEE (BBASC) AND EXPERT SCIENCE TEAM (BBEST)

Ms. Scott reviewed updates to the BBASC project review and scoring. The final selection of projects is working towards getting final approval from TWDB. Ms. Scott will share the projects that receive funding with the group in future meetings.

AGENDA ITEM NO. 7: TEXAS WATER DEVELOPMENT BOARD (TWDB) COMMUNICATIONS

Ms. McCoy updated the group that the socioeconomic status report is complete and will be reviewed at the February meeting. She also mentioned that the Region L Interregional Planning Council Member is Ms. Scott. She proceeded to highlight the rulemaking comment period for the State Flood Plan which is currently open. Ms. McCoy also informed that group that the SWIFT application period for FY2020 is open with a deadline of February 19, 2020.

AGENDA ITEM NO. 8: CHAIR'S REPORT

Ms. Scott mentioned her appointment to the Interregional Planning Council and told the group that she would keep them informed on the Council's work. She reviewed the January 27, 2020 Regional Water Planning Groups Chair's call. She received a comprehensive list from the TWDB of all the components required to make the plan administratively complete and is working to meet all of those requirements. Ms. McCoy explained the process of the IPP review for completeness. Ms. Scott mentioned the Senate Water and Rural Affairs meeting. There is an interim charge to look at future water supply and groundwater management areas. Highlights from that meeting were the future of ASR. She recommended that those interested stay involved through the web.

AGENDA ITEM NO. 9: CONSULTANT'S WORK AND SCHEDULE

Ms. Gonzalez first reviewed the Black and Veatch project list and then moved on to the schedule. The B&V team is still working on Chapter 6 and the Cumulative Effects Analysis. Task 7 with Emergency Interconnects is still in progress as well. Chapter 8 is being finalized and will be discussed at the next meeting. Likewise, the Initially Prepared Plan and Cumulative Effects Analysis will also be presented at the February meeting in order to be submitted by the March 3, 2020 deadline. The final plan is due on October 14, 2020.

AGENDA ITEM NO.10: PRESENTATION OF EMERGENCY INTERCONNECTS INFORMATION

Ms. Gonzalez reviewed the Emergency Interconnects process. The presentation can be found in the agenda packet on the Region L website.

AGENDA ITEM NO. 11: DISCUSSION AND APPROPRIATE ACTION REGARDING PRESENTATIONS OF CHAPTERS OF THE REGION L REGIONAL WATER PLAN

SUB-AGENDA ITEM A: PRESENTATION OF CHAPTER STATUSES OF THE REGION L REGIONAL WATER PLAN

Ms. Gonzalez reviewed the status of the chapters that are currently being worked on. Chapters 1 and 4 has been posted in the Region L Google Drive for review and comments. Chapters 2 and 3 are almost finalized and will be uploaded to the drive.

SUB-AGENDA ITEM D: DISCUSSION REGARDING COMMENTS RECEIVED TO DATE ON THE REGION L WATER PLAN CHAPTERS AND WATER MANAGEMENT STRATEGIES

Ms. Gonzalez then reviewed the comments that were gathered from the Planning Group and explained the consultant team's responses for Chapter 1. Ms. Wassenich recommended adding a statement in the plan regarding WMS that would not be moving forward from the 2016 plan into the 2021 plan. It was recommended that a preamble be added to highlight the dynamic nature of the plan by Mr. Sowards.

Ms. Scott recommended adding a statement to Chapter 1 that if a WUG was not listed then they would not be required to submit, or they did not submit a water loss audit to TWDB.

SUB-AGENDA ITEM C: DISCUSSION AND APPROPRIATE ACTION ON CHAPTER 8 OF THE REGIONAL WATER PLAN

Ms. Scott reviewed the Chapter 8 Workgroup recommendations. Then, Ms. Gonzalez reviewed the comments and responses to Chapter 8. The first comment that was reviewed was WAM updates. The discussion on this comment was to include the Nueces WAM in the planning group's comment. The next comment discussed was referring to Instream Flows and the group directed the consultant to add language referring to SB 2. Then there was a discussion on making the planning cycle 10 years as opposed to 5 year cycles. Ms. Scott recommended that the group continue to plan on a 5 year cycle due to development and growth in our region. Consensus was reached to keep it at a 5 year cycle.

Ms. Gonzales asked for more direction on section 8.4.4 from Mr. Flatten to clarify the language in that section. Mr. Flatten has determined that the TCEQ has new rules regarding this item and he requested that the language can be struck. Section 8.4.4 will be removed from the chapter. Mr. Schorpe inquired why the weather modification program was not an existing WMS. The planning group discussed and determined that they would move forward by studying and determining how it could become a WMS in the future. Mr. Puente said he would like to remove 8.10.4 from the chapter as well. This section refers to county authority for land use planning and he feels that it is not necessary to include in the chapter because it is outside the planning purview of the group. It was decided by the planning group to remove this section. A follow up question was how the planning group provides notice to counties that do not have a groundwater district about upcoming water managements strategies and projects in that county. Ms. Scott asked the group if anyone had objection to that concept. There was no objection. Mr. Ramos suggested adding language to the guiding principles. Mr. Janak said that he would rather see it in Chapter 8 so that it will impact the state. Ms. Scott said we would work with Ms. McCoy to determine a plan moving forward in notifying counties.

SUB-AGENDA ITEM B: PRESENTATION OF CHAPTER 5 TABLES REGARDING SUPPLIES AND COST OF WATER MANAGEMENT STRATEGIES

Ms. Gonzales reviewed the work of the consultant team on Chapter 5 and the Chapter 5 tables regarding water supplies and needs. She then explained how to navigate the packet and tables within Chapter 5. Ms. Gonzales reviewed the water user groups (WUGs) that still have needs after all the potential WMSs have been assigned to WUGs. The San Antonio Water System and GBRA agreed to sell water to those WUGs to meet their needs if those WUGs were agreeable to that. Ms Scott requested that the consultant reach out to these WUGs to determine their preference.
Ms. Gonzales then asked the planning group for their approval to let the unmet irrigation and mining needs remain as there are no resolutions at this time. The planning group came to a consensus for the consultant to move forward. Ms. Gonzales then moved on to explain water supply plans for wholesale water providers in Chapter 5.4.

AGENDA ITEM NO. 12: DISCUSSION AND APPROPRIATE ACTION TO SELECT RECOMMENDED OR ALTERNATIVE WATER MANAGEMENT STRATEGIES

Ms. Gonzales shared a snapshot of the WMS that have been evaluated and approved by the planning group. She then requested the group identify recommendations and alternatives. Mr. Yablonski asked if irrigation water conservation could be added to the list of WMS. Ms. Gonzales said that, that would require making irrigation water conservation a WMS. It would have to be an amendment. The consultant group recommended inserting a narrative within the plan to explain irrigation water conservation as a strategy. Mr. Ramos recommended that all 33 WMS move forward in the plan as recommended strategies. The planning group came to consensus on this.

Ms. Scott requested a summary on the order of magnitude of supply v. needs at the February 20, 2020 meeting.

AGENDA ITEM NO. 13: DISCUSSION AND APPROPRIATE ACTION REGARDING THE PREPARATION OF THE CUMULATIVE EFFECTS ANALYSIS

Ms. Gonzales then described the cumulative effects analysis that is required for the regional plan implementation. She then asked for planning group approval for her team to proceed with conducting the analysis for the 2021 plan. Ms. Scott asked Ms. Gonzales if the consultant team looked at environmental impacts for each WMS during the evaluations process. Ms. Gonzales confirmed this. Ms. Scott then went on to ask how the SB 3 flows information factors into the cumulative effects analysis. Mr. Raabe explained that this was factored in during individual evaluations and this analysis will describe the individual effects cumulatively to understand the big picture effects.

AGENDA ITEM NO. 14: DISCUSSION AND APPROPRIATE ACTION SETTING THE SCHEDULE FOR CALENDAR YEAR 2020 MEETINGS

The consultant suggested adding a planning group meeting during the summer to provide direction on substantial comments to the Initially Prepared Plan. The planning group agree to look for dates to meet in the summer. The planning group directed the Administrator to make the necessary arrangements to hold three public meetings to obtain comments on the IPP.

AGENDA ITEM NO. 15: POSSIBLE AGENDA ITEMS FOR THE NEXT REGION L MEETING

Futures Items for consideration are reviews of comments from Chapters 2, 3, 4, and 5. TWDB will present the Socioeconomic Impact Report and the consultant will present the Cumulative Effects Analysis.

AGENDA ITEM NO. 16: PUBLIC COMMENT

No public comment.

The meeting adjourned at 12:33 pm.

Approved by the South Central Texas Regional Water Planning Group at a meeting held on February 20. 2020.

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GARY MIDDLETON, SECRETARY

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SUZANNE SCOTT, CHAIR

4. Status of Edwards Aquifer Habitat Conservation Plan (EAHCP), Scott Storment

5. Status of Guadalupe, San Antonio, Mission, and Aransas Rivers and Mission, Copano, Aransas, and San Antonio Bays Basin and Bay Stakeholder Committee (BBASC) and Expert Science Team (BBEST)

6. Texas Water Development Board (TWDB) Communications

7. Presentation of the Socioeconomic Impact Report by TWDB

Texas Water Development Board

Socioeconomic Impact Analysis of Not Meeting Water Shortages for the 2021 Regional Water Plans

Unreliable or insufficient water supplies would negatively impact existing businesses and industry, future economic development efforts, as well as public health and safety within Texas. To recognize the importance of water for the State, Regional Water Planning Groups (RWPG) are required by Texas Administrative Code §357.33 and §357.40 to evaluate the economic and social impacts of not meeting projected water needs (potential shortages) in their regional water plans.

At the request of the RWPGs, the Texas Water Development Board (TWDB) performed a socioeconomic impact assessment of not mitigating future water needs in the event of a single year repeat of the drought of record for each of the 16 RWPGs. Impact results are reported for each Water Use Category with identified water needs. Water use categories include irrigation, livestock, manufacturing, mining, municipal and steam electric power.

Primary impact measures include lost income, jobs, and taxes, while supplemental measures address losses of utility revenue, consumer surplus, population, and school enrollment, as well as estimates of water hauling costs and additional purchases of electrical power.

The impact assessment for the primary measures is based on an input-output modeling approach, which relies on proprietary software known as IMPLAN. Sixteen planning region-specific IMPLAN models are developed to derive estimates of income, jobs, and taxes present in each area of interest.

The preliminary IMPLAN values are then combined with TWDB water use estimates within each sector to determine the value per acre-foot of use, and the resulting estimates are combined with region-specific IMPLAN multipliers to determine regional level estimates, taking into account the indirect impacts. Final impact estimates are obtained by adjusting for the degree of water shortage (assuming that adverse impact of water needs would likely vary depending upon the severity of a shortage), and then multiplying by the acre-feet of water needs within the sector.

Impact estimates for the supplemental measures generally involve combining sector-specific data with the acre-feet of needs. Over thirty major sources of data from State, Federal and local sources, as well as output from the sixteen IMPLAN models, were employed in developing the primary and supplemental impact measure estimates.

The resulting impact estimates vary with the degree of shortage, are planning region-specific, and reflect the variability of the various types of economic activity within each county.

Assumptions and Limitations:

- The analysis focuses on sectors with adequate water use data.
- Results are based on the static structure of the economy implicit within the 2016 IMPLAN data used.
- Impact estimates are a snapshot which might occur during a single year in drought of record conditions, and do not consider possible impacts of multi-year droughts.
- Spillover impacts on adjoining regions are not considered.
- Forwardly linked impacts within the economy are not considered.
- Possible building moratoriums, which address long term shortages, are not addressed within the analysis.
- All values are reported in 2018 dollars to be consistent with water management strategy cost estimates.

For additional information on the socioeconomic impact analysis and associated data, visit our website at: **http://www.twdb.texas.gov/waterplanning/data/analysis/index.asp.**

Features included on the website consist of the following:

- Interactive Dashboard for viewing region and county level impact results
- Socio Economic Impact Reports for the 16 Regional Water Planning Groups for the 2021 Regional Water Plans and previous water plans
- Frequently Asked Questions (FAQS)
- Summary of Socioeconomic Impact Assessment Methodology
- Contact: EDA@twdb.texas.gov

8. Chair’s Report

Draft Recommendations for the 2020 WCAC Report

Continue funding for the Texas Alliance for Water Conservation.

The Council recommends that, subject to available state revenue for the 2022–2023 biennium, the Texas Legislature fund this agricultural demonstration and education project promoting water conservation through best management practices and new technologies at $475,000 per year, through general revenue appropriations deposited to the Agricultural Water Conservation Fund and distributed through the TWDB's Agricultural Water Conservation Grants Program, and establish this level of annual funding through baseline general revenue appropriations to the TWDB in future years.

Background:

The Texas Alliance for Water Conservation (TAWC) is a state-supported, agricultural producer demonstration and education project promoting water conservation through best management practices and technologies to improve sustainability and profitability in the Texas Southern High Plains.

This project began in 2004, following the passage of Senate Bill 1053, which provided the Texas Water Development Board with the ability to provide grant funding to state agencies and political subdivisions, including the state university systems, for conservation projects and programs. The project initially received $6.2 million in grant funding for an 8-year period (2005-2012, extended to 2013). In 2014, the Texas Legislature appropriated an additional $3.6 million out of the Agricultural Water Conservation Fund for a 5-year period (2014-2019). Current funding has been extended to December 31, 2020 with a contract expiration date of August 31, 2021.

The TAWC Project sites represent an array of monoculture, multi-crop, and forage-livestock systems using conventional, pastureland, and various conservation tillage systems. Irrigation systems include furrow, center pivot, precision mobile drip irrigation, and subsurface drip technologies. Crops include cotton, sorghum, corn, grass seed and various specialty crops as well as perennial grass, livestock, and alfalfa. Production information and economic analyses have been used to educate producers on technologies and management strategies through demonstrations, field days, education, and outreach events across the Texas High Plains. Much of TAWC's education and demonstration efforts have focused on conservation of the Ogallala Aquifer and the technologies that supply only what the crop needs at specific stages of development, thus creating significant water savings to real farm scenarios.

Over the last 15 years, TAWC has established its identity and facilitated relationships between producers, industry, government agencies, commodities, retailers, and academia. Partnerships have been created with the Texas Tech West Texas Mesonet and Plains Cotton Growers to

develop free web-based water management tools and a Heat Unit iOS phone app for tracking cotton heat units. Relationships with cotton, corn, and sorghum commodity groups, as well as Texas and Southwestern Cattle Raisers Association have been built and strengthened.

TAWC has received over $3.2 million in supplementary grants and participated in over 500 multi-state presentations and 7 international presentations. Receiving the 2012 Blue Legacy Award, 2013 AWRA Integrated Water Resources Management Award, 2014 Texas Environmental Excellence Award in Agriculture, 2016 National Water & Energy Conservation Award, among others. Field days, field walks, the annual Water College, radio spots, e-newsletters, and social media reach at least 10,000 people per year. TAWC directs its messaging at water-use decision-makers among producers, ag consultants, and policymakers. TAWC contributes to the formal education of university students via an undergraduate ag water certificate and graduate studies in the areas of agronomy, soil management, irrigation technology, economics, and communications.

Renewed funding will allow TAWC to continue promoting water conservation and launch new thrusts to include 1) field-scale demonstrations of minimum tillage and multi-species cover crops to enhance soil water retention, and 2) options and guidelines for conversion from irrigated to rainfed cropping systems. TAWC will also communicate options in contract cattle grazing of cover crops and rainfed forages to enhance the value of land retired from irrigation. TAWC will employ its key strength in economics by analyzing the profitability and ease of management of cover crops, crop rotation, value-added crops, reduced irrigation, and rainfed systems.

New investment in TAWC will expand the impact of technology transfer for water savings through tighter linkage with soil health and value-added land management. TAWC is requesting $475,000 per year to support the core operations and personnel to carry on administration, producer relations, education, event programing, and demonstrations. Supplementary grants will be obtained to support specific outreach objectives.

Restore funding for the Texas Ag Water Efficiency Education and Demonstration Project facility.

The Council recommends that, subject to available state revenue for the 2022–2023 biennium, the Texas Legislature fund this project for the education, research and development of agricultural water conservation initiatives at $200,000 per year, through general revenue appropriations deposited and distributed through the TWDB's Agricultural Water Conservation Grants Program, and establish this level of annual funding through baseline general revenue appropriations to the TWDB in future years.

Background:

From 2004 to 2015 the Texas Water Development Board's Agricultural Water Conservation Grants Program funded a project known as the Texas Project for Ag Water Efficiency (AWE). This project demonstrated the various types of irrigation on farms in the Lower Rio Grande Valley. The project assisted farmers in implementing conservation measures that would conserve water and maintain the economic viability of their farming practices. Out of these demonstrations, a number of operations were converted to more efficient irrigation practices both by the farmers and the districts.

A component of the project was the construction of a meter calibration and educational center named the Texas Center for Ag Water Efficiency. Its purpose is the demonstration, education and research of agricultural water conservation measures, tools and technologies. This million-dollar facility is the only one of its kind in Texas and one of only a handful nationwide. Water managers and employees from across the state utilized these facilities to educate personnel on the refinement of agricultural water measurement and delivery.

Multiple developments resulted from the work at the facility and have been adopted by several Rio Grande Valley irrigation districts as well as El Paso County Water Improvement District #1 and the Lower Colorado River Authority. An overview of these developments are as follows:

> **Gate development:** Efficient low-cost canal gates for controlling water delivery were developed. These gates were designed to operate in open canal systems using solar or wind generated power, a necessity as many sites were without a power source.
>
> **Automation:** Prototypes of these gates were designed and perfected to be utilized with a Supervisory Control and Data Acquisition (SCADA) system also developed at the facility. The SCADA development allowed for the automation of multiple gates throughout the district's delivery system to maximize the efficient delivery of water to farmers and cities served by the district. The facility being equipped with these auto-gates provides a vehicle for the demonstration of a fully automated and efficient district delivery system.

Telemetry: This system was developed to meet the unique needs of monitoring and operation of delivery systems that are common for the surface water irrigation systems of Texas. New telemetry hardware and software is constantly being developed but not necessarily targeting irrigation needs. The AWE facility is ideal for demonstrating and testing the viability of these systems for utilization in the agricultural irrigation industry.

Meter calibration: The AWE facility was designed to enable meter calibration for various types of metering devices used in irrigation. One of the major benefits that developed out of this facility was the ability to demonstrate each of the many devices in typical raw water conditions. Many meters simply will not function properly in raw water conditions as trash and hydrophilic vegetation fouls the mechanical components of standard meters. This facility allows for the demonstration of new devices to determine if in fact they will withstand the harsh raw water conditions typical to water diverters across the state.

Irrigation practices: Educational programs are a must to develop and encourage the use of improved irrigation practices. This facility is ideal for not only demonstration of different practices but in the education and presentation of new developments in surface water irrigation. We have partnered with the Texas A&M AgriLife Extension Service, Texas State Soil and Water Conservation Districts and the United States Department of Agriculture Natural Resource Conservation Service to present programs important to the promotion of water conservation and practical methods of best management practices.

Additional educational programs: New telemetry hardware and software is constantly being developed but not necessarily targeting irrigation needs. The AWE facility is ideal for demonstrating and testing the viability of these systems for utilization in the agricultural irrigation industry. The facility is setup to educate the users on the best options for their needs but also could be used to demonstrate and educate the engineering community. This would better enable them to keep up to speed on the ever-changing systems available and to incorporate the new systems into their designs.

The facility is ideal and necessary for the development, research and education in new conservation and water management systems that will apply to the vast amount of unique conditions in Texas irrigation. The use of off-the-shelf products and programs are expensive and many times not economically feasible. They often fail to meet the needs of Texas irrigators and are subsequently rejected by them. This facility can help to build confidence and demonstrate the feasibility of new water conservation technologies. An additional plus for the developments from this project is the availability of the data. The gate programming and construction plans, and all demonstration data is available at no cost to entities across the state as they were all developed with public funds.

During the active project period, the Harlingen Irrigation District hosted more than 20 workshops, seminars, and other such training events at the Rio Grande Center for Ag Water

Efficiency. These educational opportunities allowed for water providers and agricultural producers to not only gain knowledge on developing technology and conservation strategies but also established a dialogue between the producers and water providers to further innovations. Four of the Council's Blue Legacy Awards for agriculture have been awarded to recipients related to this project.

As surface water is still the largest user of water in several areas of the state, this facility has the potential to play a significant role in the education, research and development of water conservation initiatives for irrigated agriculture. Despite initial investment, this facility is no longer being used to its full potential.

Restored funding will enable the maintenance, improvement and expansion of the mechanical and technological components of the facility; which in turn, will allow for the growth of educational and research opportunities. As innovative water conservation technologies continue to evolve, the vision for the Rio Grande Center for Ag Water Efficiency is to use the facility as a hub to demonstrate the relationship between effective on-farm and district delivery systems and educate both agricultural producers, water providers and project developers on proven water conservation technologies that are available to modernize their operations.

Maintain funding for TWDB's Agricultural Water Conservation Grant program.

The Council recommends that, subject to available state revenue for the 2022–2023 biennium, the Texas Legislature maintain the current level of $1,200,000 per year for Texas Water Development Board's Agricultural Water Conservation Grant Program, in addition to any funds appropriated specifically for the Texas Alliance for Water Conservation and the Texas Project for Ag Water Efficiency.

Background:

During the 86th Legislative Session, the appropriations act increased authorized dispersals through the Agricultural Water Conservation Grant Program from $600,000 to $1,200,000 per fiscal year.

The Agricultural Water Conservation Program promotes water conservation programs and projects throughout the state by supporting the implementation of water conservation water management strategies identified in the state and regional water plans. Previously funded activities include demonstrations of conservation practices, educational outreach, purchase and installation of water use monitoring equipment, and irrigation-efficiency improvements. Funding recipients must report improvements in water use efficiency or water savings. Over the past five years, grant and loan recipients have reported approximately 350,000 acre-feet of water savings through the program.

The grant program offers funding through a competitive process at least once a year to state agencies and political subdivisions for agricultural water conservation programs and projects. Grant topics vary from year to year to address current issues in agricultural water conservation. Projects awarded funding must further water conservation in the state and support the implementation of water conservation management strategies in the state water plan. Specific evaluation criteria are listed in the request for applications.

The success of the program is quantified through annual water savings estimates reported by grant and loan recipients for five years after equipment installation and/or construction completion.

The program has collectively saved:

- 496,000-acre feet of water reported through 74 grant projects over the past 10 years.
- 79,000-acre feet of water reported through 10 loan projects over the past 10 years.

Examples of successful projects that implement irrigation conservation strategies include:

- Irrigation scheduling via the use of real-time soil moisture monitoring, remote system shutoff devices and other conservation tools in Regions A and O.
- Irrigation conservation demonstrations and outreach through the Texas Alliance for Water Conservation project, identified as a strategy in the Region O plan.
- Irrigation system improvements such as canal lining, canal-to-pipeline projects, SCADA systems, and automated canal gates in Region E, Region K, and Region M.
- Irrigation water use measurement throughout the state.

Advancing Use of Data to Understand Trends in Water Use.

Request $25,000 in funding to be made available through TWDB to advance the understanding of municipal water use trends using available annual reporting data

Objective:

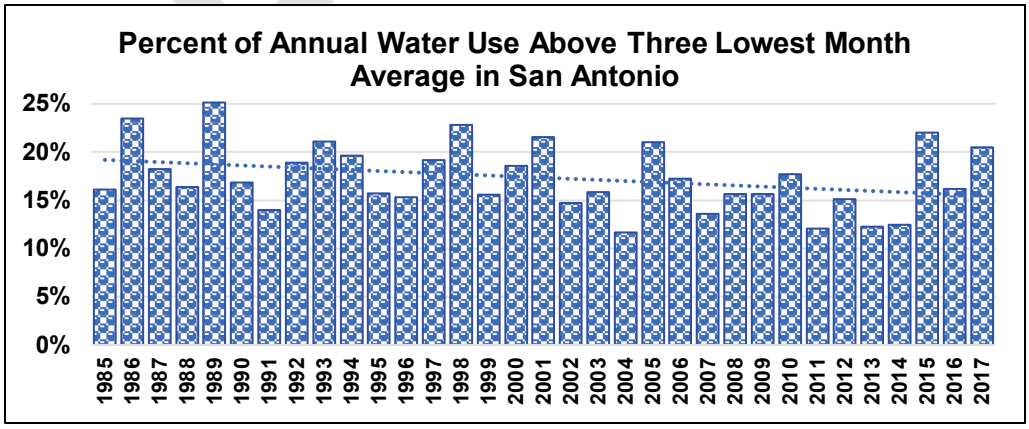
The objective is to use data reported by municipal providers to better understand seasonal as well as indoor and outdoor water use trends over time. The project would set up analytics that could be easily updated each year as new reports make new information available. An annual report on seasonal and indoor/outdoor water use patterns across regions and by water providers could be made available to help assess progress and update strategies.

Background:

The Texas Water Conservation Advisory Council is charged with determining the effectiveness of water conservation in Texas and reporting its findings to the Texas Legislature and Governor. The Texas Water Development Board, as the State's water resource planning agency, collects many types of water use data and uses the data to provide input for the Regional Water Planning Groups to use in the five year Texas water planning cycle. The TWDB data and other data sources can be used to develop statistical methods to determine the impact that conservation is having on water use in Texas in the municipal and industrial environment.

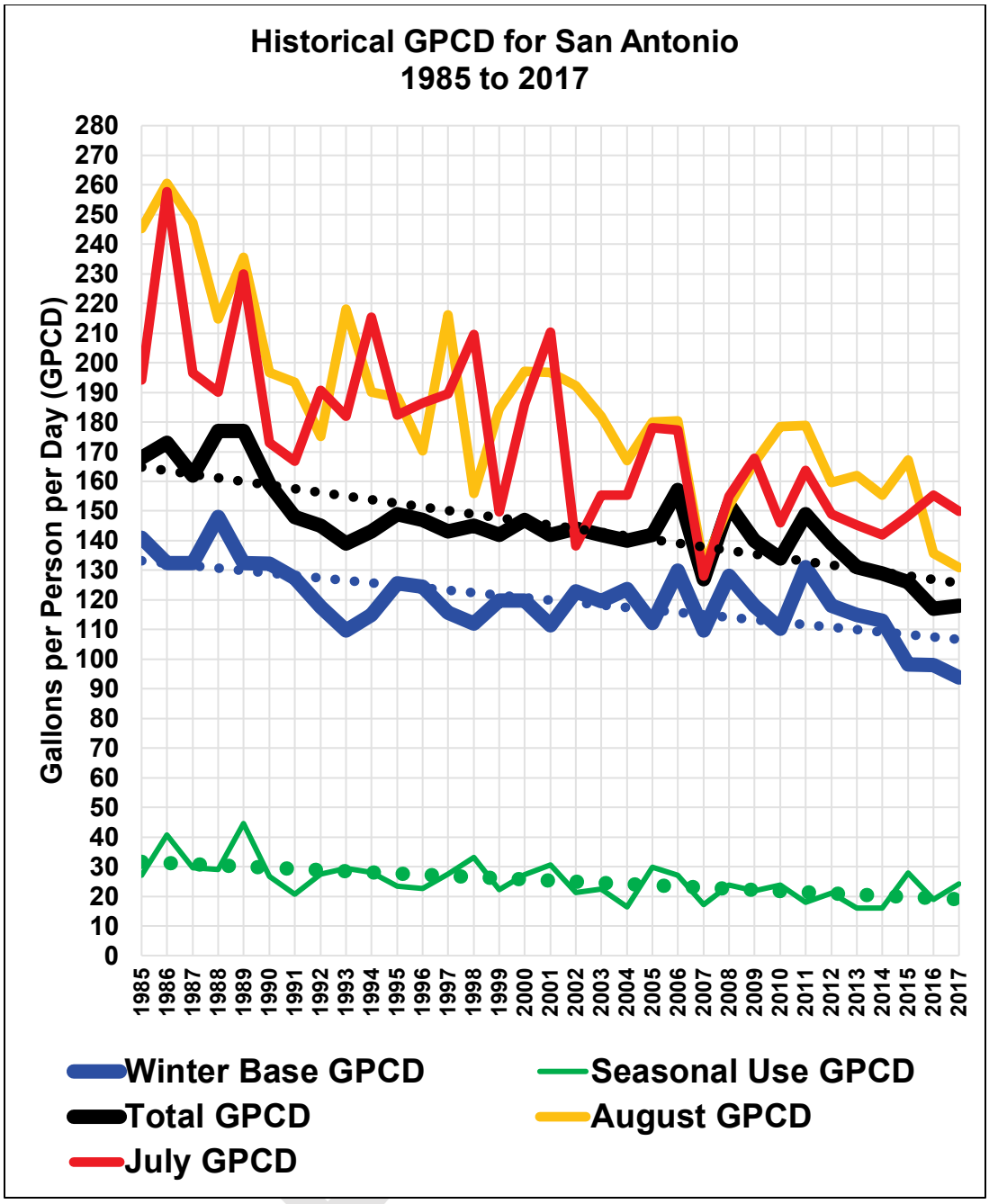
Example: Trends in seasonal use:

This would identify how successful outdoor water use programs are. San Antonio is used as an example. Seasonal use is usually defined as the amount of water a system uses above its average of the three lowest months per year. I have attached an example for San Antonio based on TWDB data. Please note that the lowest months are not always December, January and February. Highest months are July and August. (See table and graph on next two page). The percent of water used above the three lowest month is shown below.



Per Capita Monthly Water Use in San Antonio													
Year	Month												Annual
	1	2	3	4	5	6	7	8	9	10	11	12	
1985	153	148	146	161	172	175	194	245	186	156	142	135	168
1986	128	135	166	182	166	166	258	261	179	154	142	134	173
1987	135	132	141	155	150	156	197	247	177	174	145	131	162
1988	145	150	155	176	197	203	190	215	197	180	164	150	177
1989	128	124	145	172	199	196	230	236	209	181	145	153	177
1990	135	136	126	131	167	248	173	197	160	154	138	141	159
1991	129	130	145	140	146	172	167	193	140	157	130	123	148
1992	112	119	122	131	134	146	191	175	175	176	134	122	145
1993	107	109	113	125	124	130	182	218	177	146	118	114	139
1994	121	118	107	136	138	162	215	190	144	135	125	120	143
1995	127	125	125	140	153	156	182	188	169	156	133	130	149
1996	128	144	137	160	160	168	186	170	126	136	127	119	147
1997	117	111	119	126	127	129	189	216	178	144	129	125	143
1998	116	114	119	156	187	191	210	156	137	129	111	112	145
1999	114	123	129	134	137	151	150	184	171	151	135	123	142
2000	118	122	128	140	147	174	186	197	158	144	129	120	147
2001	114	112	118	135	146	185	210	197	134	127	114	108	142
2002	123	125	141	130	155	186	138	192	151	133	131	121	144
2003	115	115	129	140	172	164	155	182	137	133	128	130	142
2004	124	123	124	126	139	152	155	167	151	143	138	137	140
2005	116	108	112	138	138	155	178	180	170	144	142	120	142
2006	132	135	122	152	155	166	177	180	176	171	167	147	157
2007	109	122	98	123	128	130	128	131	133	148	143	130	127
2008	133	141	130	145	177	208	155	152	156	159	145	122	152
2009	114	118	128	142	143	159	168	166	138	142	137	122	140
2010	111	103	116	119	128	140	146	178	128	146	142	145	134
2011	132	135	143	150	152	166	164	179	166	136	137	126	149
2012	130	115	121	149	136	164	149	160	143	150	132	117	139
2013	110	114	125	121	121	131	145	162	140	131	135	134	131
2014	112	112	115	129	130	129	142	155	138	135	120	128	129
2015	100	96	100	106	115	122	148	167	154	149	129	123	126
2016	107	116	113	115	107	127	155	136	117	123	98	89	117
2017	91	91	99	114	125	133	150	131	130	120	119	110	118
Blue = Low Month, Yellow = Two Next Lowest Months, Light Orange = High Month													

As this table shows, December, January and February are not necessarily the lowest water use months. For this analysis, total monthly use was divided by the number of days in that month to determine daily use. Remember that February has either 28 or 29 days depending on leap year.



This type of analysis would show how the trends in seasonal and base use are for each city. The analysis is solely based on TWDB data that already exists.

LOCKHART				ALAMO HEIGHTS			
Year	Population	Use	GPCD	Year	Population	Use	GPCD
1980	7,953	1,428	160	1980	6,252	2,742	392
1984	9,178	1,427	139	1984	6,583	3,609	489
1985	9,628	1,356	126	1985	6,908	2,251	291
1986	10,100	1,453	128	1986	7,250	2,603	321
1987	9,929	1,407	127	1987	7,433	2,135	256
1988	9,760	1,407	129	1988	7,620	2,796	328
1989	9,071	1,499	148	1989	6,477	2,567	354
1990	9,205	1,816	176	1990	6,502	2,210	303
1991	9,265	1,448	140	1991	6,726	2,071	275
1992	9,262	1,549	149	1992	6,990	1,928	246
1993	9,415	1,659	157	1993	7,146	2,058	257
1994	9,403	1,737	165	1994	7,135	1,982	248
1995	9,441	1,707	161	1995	7,213	2,074	257
1996	9,769	2,033	186	1996	7,201	2,185	271
1997	10,144	1,697	149	1997	7,294	2,034	249
1998	10,619	1,844	155	1998	7,309	2,170	265
1999	11,152	1,786	143	1999	7,147	2,234	279
2000	11,615	1,795	138	2000	7,319	2,000	244
2001	12,350	1,804	130	2001	7,318	2,072	253
2002	12,361	2,188	158	2002	7,327	2,011	245
2003	12,651	1,908	135	2003	7,340	1,951	237
2004	13,249	1,908	129	2004	7,342	1,795	218
2005	13,065	1,888	129	2005	7,294	1,781	218
2006	13,228	No Return	No Return	2006	7,546	2,144	254
2007	13,508	No Return	No Return	2007	7,537	1,793	212
2008	13,880	1,703	110	2008	7,699	2,179	253
2009	14,124	1,777	112	2009	7,818	2,066	236
2010	12,698	1,644	116	2010	7,031	2,066	262
2011	12,781	1,980	138	2011	7,136	2,053	257
2012	12,811	1,810	126	2012	7,168	2,053	256
2013	13,004	1,628	112	2013	7,434	1,888	227
2014	13,095	1,732	118	2014	7,518	1,894	225
2015	13,283	1,645	111	2015	7,692	1,608	187
2016	13,091	1648	112	2016	6,736	1,608	213
2017	13,248	1,683	113	2017	6,911	1,821	235

HOUSTON				DALLAS			
Year	Population	Use	GPCD	Year	Population	Use	GPCD
1980	1,595,157	354,159	198	1980	904078	227,669	225
1984	1,725,964	339,039	175	1984	981352	253,200	230
1985	1,727,437	356,859	184	1985	992370	265,417	239
1986	1,728,910	361,279	187	1986	1003511	244,701	218
1987	1,713,424	322,704	168	1987	995396	245,874	221
1988	1,698,090	286,409	151	1988	987361	280,445	254
1989	1,629,225	272,680	149	1989	988144	262,452	237
1990	1,630,553	286,550	157	1990	1006877	267,753	237
1991	1,657,504	317,871	171	1991	1016106	253,613	223
1992	1,679,421	316,443	168	1992	1026381	264,690	230
1993	1,700,672	319,712	168	1993	1036309	272,859	235
1994	1,721,225	287,073	149	1994	1047215	243,633	208
1995	1,741,257	245,968	126	1995	1048882	269,735	230
1996	1,761,754	355,064	180	1996	1062218	273,411	230
1997	1,828,544	285,185	139	1997	1077606	274,559	227
1998	1,861,705	314,892	151	1998	1082947	317,821	262
1999	1,887,772	348,905	165	1999	1087380	369,061	303
2000	1,953,631	347,947	159	2000	1188580	351,484	264
2001	1,972,083	353,443	160	2001	1196825	334,905	250
2002	2,006,963	361,942	161	2002	1209784	332,007	245
2003	2,024,532	371,914	164	2003	1210606	322,248	238
2004	2,040,645	377,160	165	2004	1213627	326,265	240
2005	2,071,162	385,120	166	2005	1221162	333,762	244
2006	2,112,671	346,393	146	2006	1233970	311,901	226
2007	2,139,408	317,408	132	2007	1243287	328,202	236
2008	2,215,947	295,808	119	2008	1268533	302,313	213
2009	2,255,158	336,512	133	2009	1290989	251,775	174
2010	2,099,451	321,460	137	2010	1197816	266,169	198
2011	2,135,186	490,708	205	2011	1216203	267,928	197
2012	2,164,735	368,309	152	2012	1235699	268,037	194
2013	2,189,925	361,946	148	2013	1244789	264,775	190
2014	2,247,167	306,023	122	2014	1277995	270,549	189
2015	2,303,228	361,202	140	2015	1291938	285,447	197
2016	2,264,724	435,574	171	2016	1252388	257,849	183
2017	2,282,842	313,234	122	2017	1270170	250,663	176

LUBBOCK				SAN ANTONIO			
Year	Population	Use	GPCD	Year	Population	Use	GPCD
1980	173979	34,679	178	1980	785880	183,204	208
1984	182265	33,354	163	1984	855075	186,831	195
1985	184321	33,048	160	1985	884216	166,890	168
1986	186400	32,093	154	1986	914350	177,213	173
1987	187243	33,583	160	1987	927653	168,114	162
1988	188090	33,958	161	1988	941150	186,110	177
1989	185318	36,424	175	1989	922860	183,007	177
1990	186206	36,655	176	1990	935933	166,615	159
1991	188789	33,841	160	1991	958273	158,893	148
1992	191523	32,320	151	1992	972641	157,499	145
1993	193194	35,320	163	1993	991861	153,885	139
1994	194286	38,840	178	1994	1034498	165,696	143
1995	194349	41,065	189	1995	1065384	177,763	149
1996	194188	40,225	185	1996	1098642	180,998	147
1997	193266	37,355	173	1997	1111250	177,797	143
1998	194262	45,479	209	1998	1125056	182,733	145
1999	193741	38,846	179	1999	1148436	182,671	142
2000	199564	40,461	181	2000	1144646	188,479	147
2001	201179	41,477	184	2001	1172055	186,443	142
2002	203157	40,507	178	2002	1195742	192,455	144
2003	204943	43,867	191	2003	1217540	193,662	142
2004	206362	42,764	185	2004	1238983	194,297	140
2005	208848	40,004	171	2005	1262861	200,871	142
2006	210622	41,095	174	2006	1296265	227,386	157
2007	215729	31,192	129	2007	1320060	187,332	127
2008	220688	33,901	137	2008	1348539	229,682	152
2009	226104	33,734	133	2009	1373546	215,843	140
2010	229573	33,652	131	2010	1327407	198,814	134
2011	233318	43,926	168	2011	1358646	226,276	149
2012	237243	38,123	143	2012	1382056	215,037	139
2013	241740	38,597	143	2013	1407188	206,811	131
2014	244712	36,395	133	2014	1428340	207,113	129
2015	248640	33,744	121	2015	1451413	204,644	126
2016	246963	35,757	129	2016	1747333	230,239	117
2017	254565	34,614	121	2017	1780836	237,065	118

AMARILLO			
Year	Population	Use	GPCD
1980	149,230	33,034	198
1984	164,141	36,010	196
1985	164,994	34,036	184
1986	165,850	35,518	191
1987	165,889	35,759	192
1988	166,010	34,806	187
1989	156,701	34,956	199
1990	157,615	41,310	234
1991	160,288	41,588	232
1992	161,781	41,708	230
1993	163,569	39,820	217
1994	165,919	42,056	226
1995	167,548	41,788	223
1996	171,891	44,334	230
1997	172,147	39,890	207
1998	173,727	25,103	129
1999	173,133	23,078	119
2000	173,627	49,789	256
2001	175,203	42,460	216
2002	177,767	38,033	191
2003	179,447	48,415	241
2004	181,531	44,938	221
2005	184,365	52,661	255
2006	185,911	47,846	230
2007	188,518	36,349	172
2008	190,016	40,248	189
2009	191,201	37,560	175
2010	190,695	38,440	180
2011	194,590	46,402	213
2012	197,570	43,127	195
2013	199,454	39,105	175
2014	200,708	37,739	168
2015	201,158	31,721	141
2016	208,847	41,265	176
2017	210,191	38,331	162

Establish Level 1 Validation program for Water Loss Audits.

The Council recommends that, subject to available state revenue for the 2022–2023 biennium, the Texas Legislature appropriate $605,000 for the biennium to the TWDB to establish a program building on a water audit validation study being conducted by the TWDB. Under the guidance of the TWDB, level 1 validations would be conducted of water loss audits submitted by a group of 50 utilities volunteering to participate, establish a methodology for conducting level 1 validations, and establish a training program to certify validators. Preference for participation would be given to those utilities with a financial obligation to the State requiring that they complete a water loss audit.

Background:

Level 1 validation of water loss audits is crucial if those audits are to be used to make water loss funding decisions, both by the State and by utilities. Level 1 validation ensures that proper processes are being conducted per industry best practice guidance, increasing the efficacy of spending on reducing water loss and helping ensure that cost effective water loss measures are targeted.

When California implemented Level 1 validation of water loss audits, the percentage of submitted audits that did not contain unrealistic results raised by over ten percent and reported data validity scores dropped by a median number of 13 points. Thus, the data accuracy improved, while overconfidence in the results of those audits decreased.
Level 1 validation would require training of on proper validation methodology according to the TWDB validation scoring matrix and would be separate from the training that the TWDB currently requires for submission of water loss audits. The validator cannot be the same person who completes the audit to prevent bias and to minimize unintentional omissions. For this recommendation, validation would be conducted by third party contractors. This funding would establish a framework for an ongoing validation effort.

Budget Justification:

Task	Cost
Program Announcement/Recruitment	**$20,000**
Provide on-going management of the program, including the development of a program management plan and associated schedule, marketing and outreach plan, regular team coordination calls for program management and documentation, internal progress tracking, internal task assignments and accountability, program management plan amendments, and course corrections as warranted.	
Development of a recruitment and retention plan, development of all communication materials in support of the recruitment plan.	
Manage water system recruitment and retention for the program.	
Level 1 Validation Process	**$175,000**
Receipt and review of supporting documentation	
Level 1 Validation session	
Utility-specific documentation	
Compilation and reporting of validation results	**$40,000**
Validation Certification	**$250,000**
Texas specific Level 1 Validation certification criteria	
Scheduling and administration of certification workshops	
Certification workshops	
Proctor/examinations/compilation of results	
Participation notification and reporting	
Training of TWDB staff for follow-on certification training	**$20,000**
Conduct "train the trainer" classes with TWDB staff	
TWDB staffing during validation and certification process	**$100,000**
On-going administration of the Program including ongoing management for training and technical assistance, subject matter experts, and regular progress reporting.	
Kickoff call to begin the process of Validation Training Program design.	
Host a webinar to prepare attendees for Level 1 Validation Process.	
Provide direct outreach to training participants to ensure they will bring appropriate representation of utility staff to events.	
Total	**$605,000**

Supporting a statewide water awareness campaign.

The council recommends that the Texas Legislature support the implementation of a statewide water awareness campaign. A campaign would be a continuation of the efforts initiated by the statewide water conservation public awareness program that was created by the Texas Legislature in 2007 with the passage of Senate Bill 3 and House Bill 4.

Background:

[Excerpt from 2018 WCAC Report]

Charge 3. Monitor the effectiveness of the statewide water conservation public awareness program and associated local involvement in implementation of the program

Water conservation is the most cost-effective water management strategy to meet the state's water needs, and regional water planners often identify public awareness and education as a key component of that strategy. Municipal water conservation as recommended in the 2017 State Water Plan accounts for approximately 10 percent of the state's recommended water management strategy supply volumes in 2070 (Figure 3) (TWDB, 2016).

In monitoring water conservation programs and public awareness efforts, the Council found that consistent messaging supported by research and data enhances the effectiveness of these activities. Research in Texas in 2004 and 2014[1] indicated that people are more likely to conserve water when they know the source of their water supply. That theme is an essential component of the current statewide water conservation public awareness brand, "Water IQ: Know Your Water".

Nearly 100 entities have become Water IQ partners with the TWDB, but without legislative appropriations the program has not become a statewide effort. Due to the divergent geography and water sources in Texas, some water providers have dedicated resources to develop awareness campaigns specific to their needs. The TWDB and the Meadows Center for Water and the Environment are currently researching other statewide "umbrella" messages that can be tailored to meet the needs of local and regional water providers. The Council continues to believe that a statewide conservation message should be supported with state-level funding.

[1] Find the 2014 "Texas Statewide Water Conservation Survey" by Baselice & Associates and enviromedia at: http://www.texaswater.org/wp-content/uploads/2014/09/Texas-Statewide-Water-Conservation-Survey.pdf.

9. Discussion and Appropriate Action Regarding the Consultant's Work and Schedule

2021 South Central Texas Regional Water Plan

Anticipated Schedule

February 2020 RWPG Meeting

Task/ Chapter	Description	2019						2020											
		J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1	Planning Area Description																		
2	Population/Water Demands																		
3	Existing Supply Analyses																		
4	Identification of Needs																		
5	Identification & Evaluation of Potential WMSs																		
6	Impacts of Regional Water Plan; Cumulative Effects																		
7	Drought Response Information, Activities, & Recommendations																		
8	Policy Recommendations & Unique Sites																		
9	Infrastructure Financing Analysis																		
10	Public Participation & Plan Adoption										Public Hearings								
11	Implementation & Comparison to Previous Plan																		
12	Prioritization											Due Oct. 14, 2020							
NA	Texas Legislative Sessions																		
NA	GMA DFC Revisions/Readoption																		

Legend

- Scheduled Region L Meeting
- Anticipated Region L Meeting
- Anticipated Activity
- Current Month

Jan 23

Feb 20

2021 Initially Prepared Plan (IPP) Due: Mar. 3, 2020

Jul 30

Sep 3 Adopt Plan

2021 Final Plan Due Oct. 14, 2020

10. Presentation of the Cumulative Effects Analysis

BUILDING A WORLD OF DIFFERENCE

Chapter 6: Impacts of the Regional Water Plan and Consistency with Protection of Resources

Regional Water Planning Group Meeting
February 20, 2020

BUILDING A WORLD OF DIFFERENCE®

SWCA ENVIRONMENTAL CONSULTANTS
BLACK & VEATCH

Chapter 6: Impacts of the RWP and Consistency with Protection of Resources

- 6.1: Cumulative Effects of Regional Water Plan Implementation
- 6.2: Environmental Assessment
- 6.3: Key Water Quality Parameters
- 6.4: Voluntary Redistribution of Water from Rural and Agricultural Areas
- 6.5: Social and Economic impacts of Not Meeting Projected Water Needs (Report provided by TWDB)
- 6.6: Effects on Navigation
- 6.7: Environmental Benefits and Concerns

Draft 2-14-20

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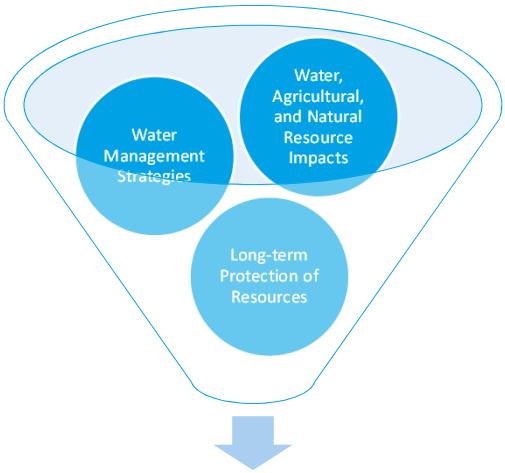

Cumulative Effects of Regional Water Plan Implementation

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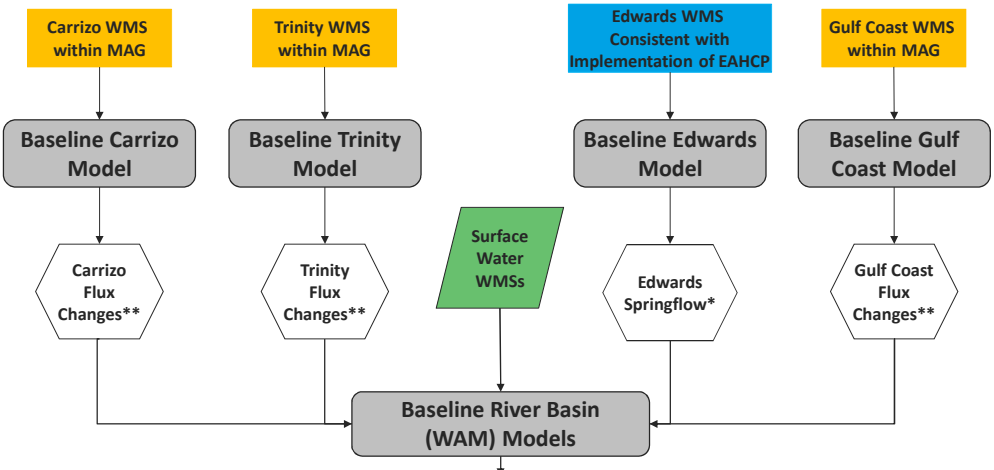
Cumulative Effects of the RWP Implementation



* Springflows Consistent with Full EAHCP Implementation

** Flux Changes at Full MAG Pumpage Levels

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Cumulative Effects of RWP Implementation

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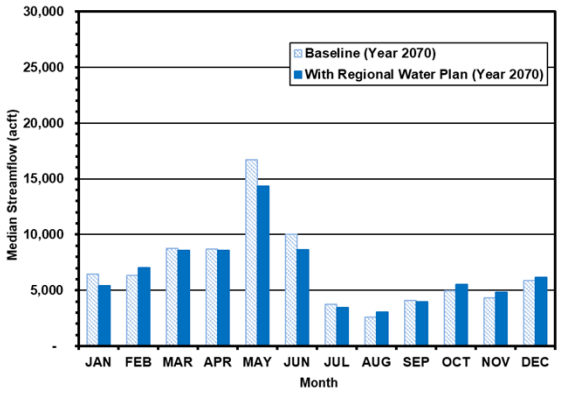
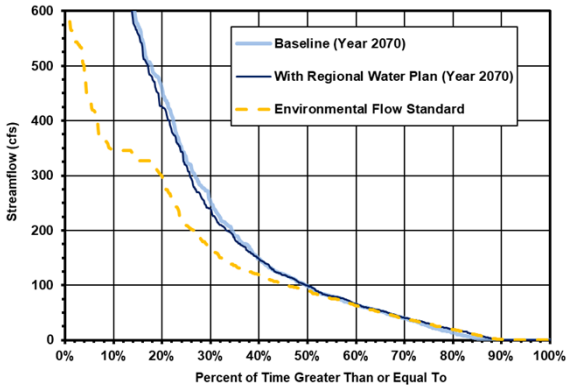
6.1 Impacts on Instream Flow & Freshwater Inflow





Map Point 1: Guadalupe River above Comal River at New Braunfels

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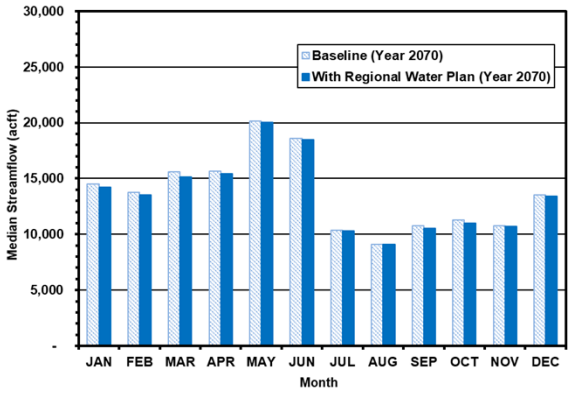
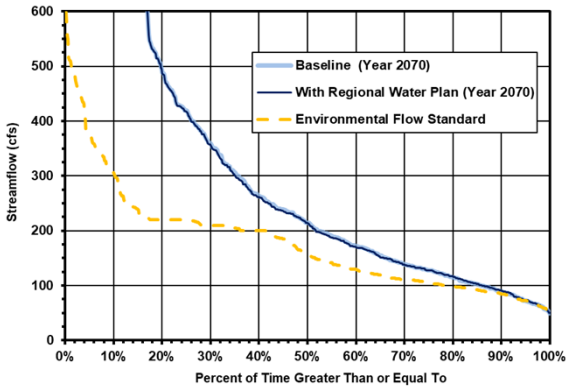
6.1 Impacts on Instream Flow & Freshwater Inflow





Map Point 2: San Marcos River at Luling

Draft 2-14-20

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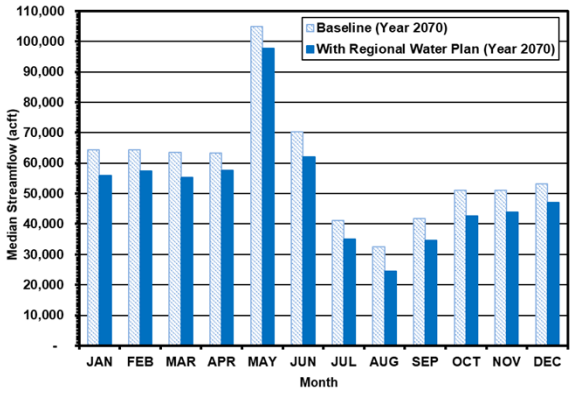
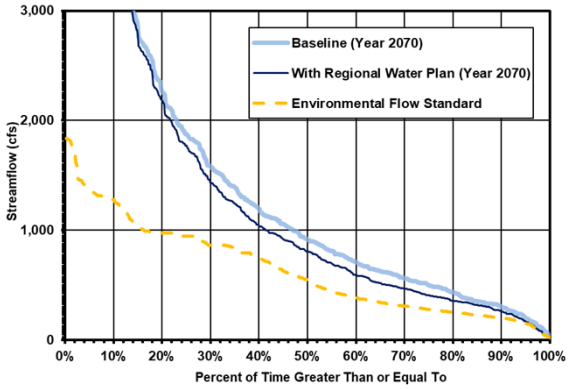
6.1 Impacts on Instream Flow & Freshwater Inflow





Map Point 3: Guadalupe River at Victoria

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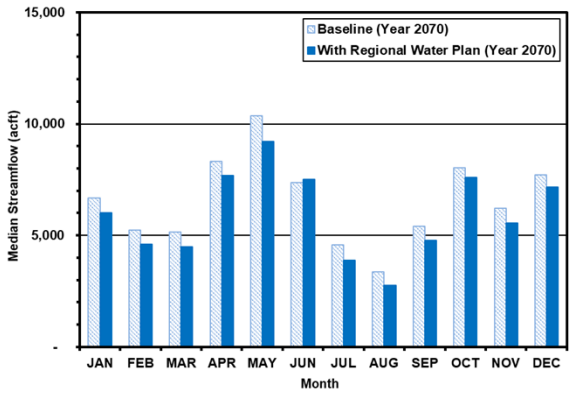
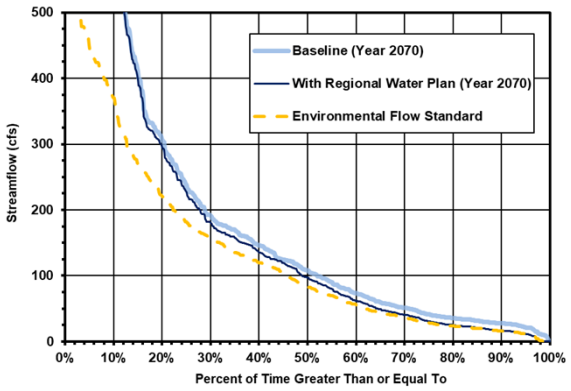
8

6.1 Impacts on Instream Flow & Freshwater Inflow





Map Point 4: San Antonio River near Falls City

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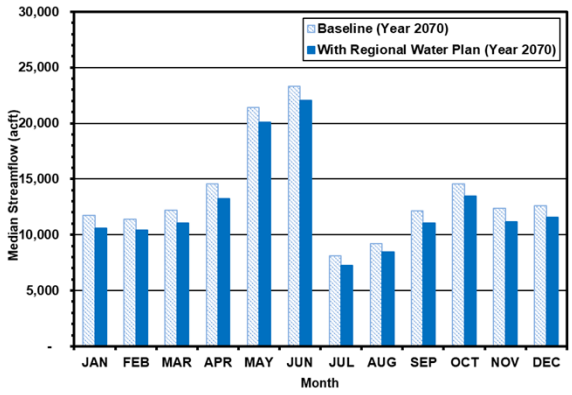
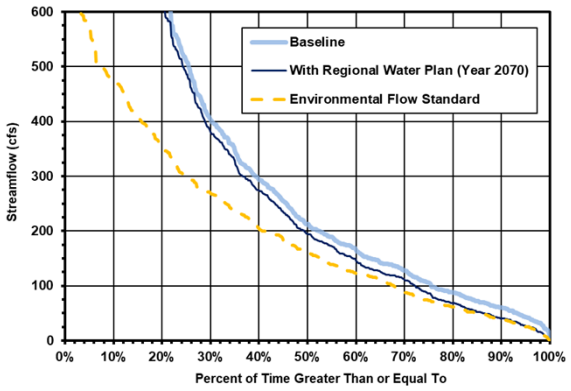
6.1 Impacts on Instream Flow & Freshwater Inflow





Map Point 5: San Antonio River at Goliad

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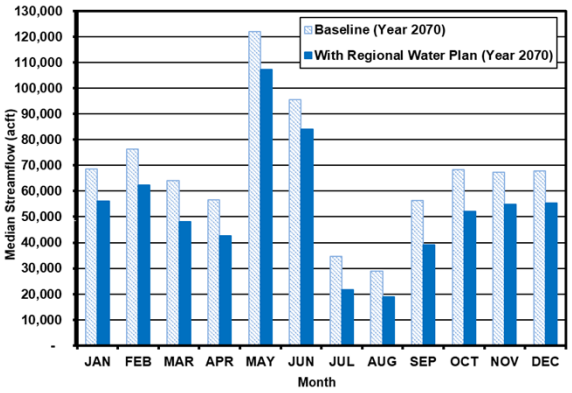
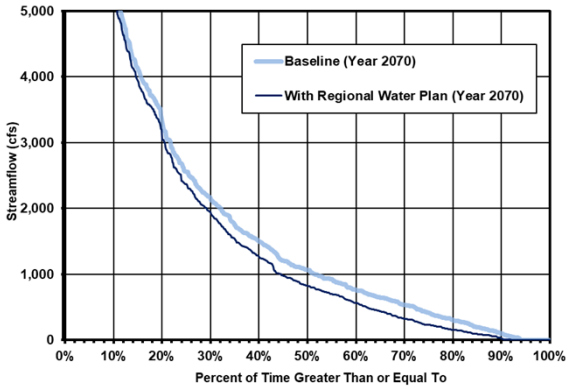
6.1 Impacts on Instream Flow & Freshwater Inflow

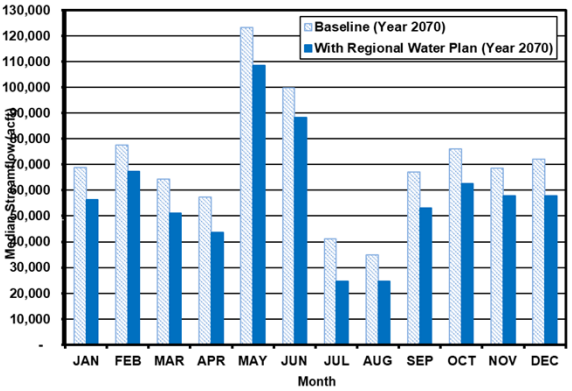


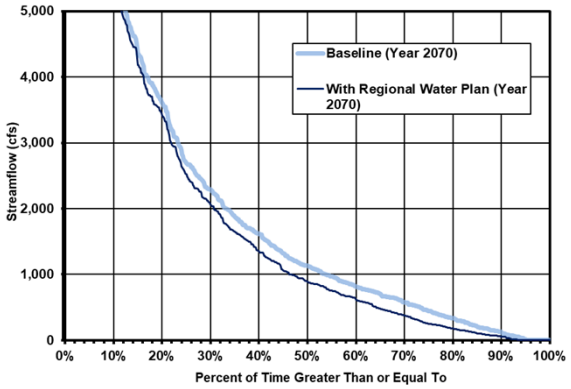


There are no Environmental Flow Standards at this point

Map Point 6: Guadalupe River at Diversion Dam & Saltwater Barrier near Tivoli

6.1 Impacts on Instream Flow & Freshwater Inflow

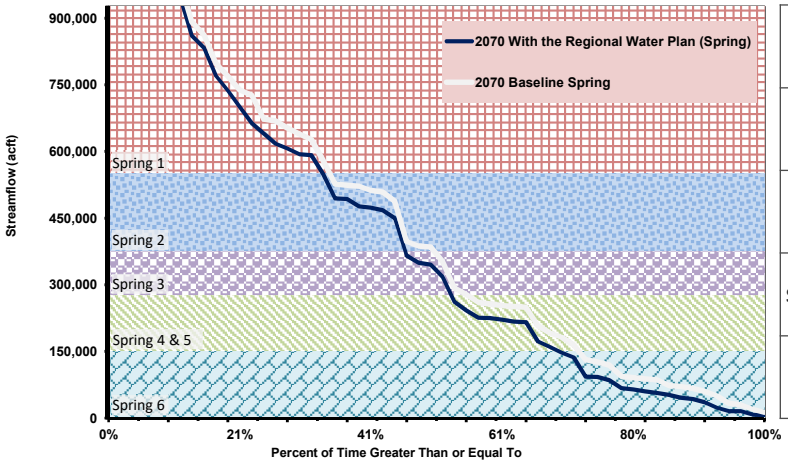




Environmental Flow Standards at this point are only evaluated during the Spring and Summer seasons

Map Point 7: Guadalupe Estuary

6.1 Impacts on Instream Flow & Freshwater Inflow



Spring 1	Δ = -0.4%	shall not be decreased by more than 5%
Spring 2	Δ = -3.3%	shall not be decreased by more than 5%
Spring 2&3	Δ = -1.5%	shall not be decreased by more than 5%
Spring 4 & 5	16.2%	shall not be increased to more than 67% of the total years
Spring 6	Δ = 2.9%	shall not be increased by more than 8%

Map Point 7: Guadalupe Estuary – Spring

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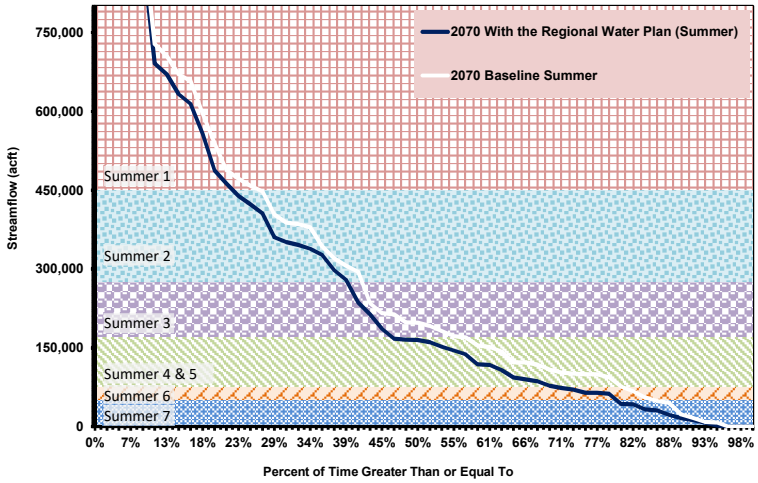
6.1 Impacts on Instream Flow & Freshwater Inflow



Summer 1	Δ = -3.7	shall not be decreased by more than 5%
Summer 2	Δ = 1.8%	shall not be decreased by more than 5%
Summer 1 & 2	Δ = -1.9%	shall not be decreased by more than 5%
Summer 4 & 5	1.2%	shall not be increased to more than 10%
Summer 7	Δ = 5.6%	shall not be increased by more than 8%

Map Point 7: Guadalupe Estuary – Summer

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Chapter 6: Impacts of the RWP and Consistency with Protection of Resources

- 6.1: Cumulative Effects of Regional Water Plan Implementation
- 6.2: Environmental Assessment
- 6.3: Key Water Quality Parameters
- 6.4: Voluntary Redistribution of Water from Rural and Agricultural Areas
- 6.5: Social and Economic impacts of Not Meeting Projected Water Needs (Report provided by TWDB)
- 6.6: Effects on Navigation
- 6.7: Environmental Benefits and Concerns

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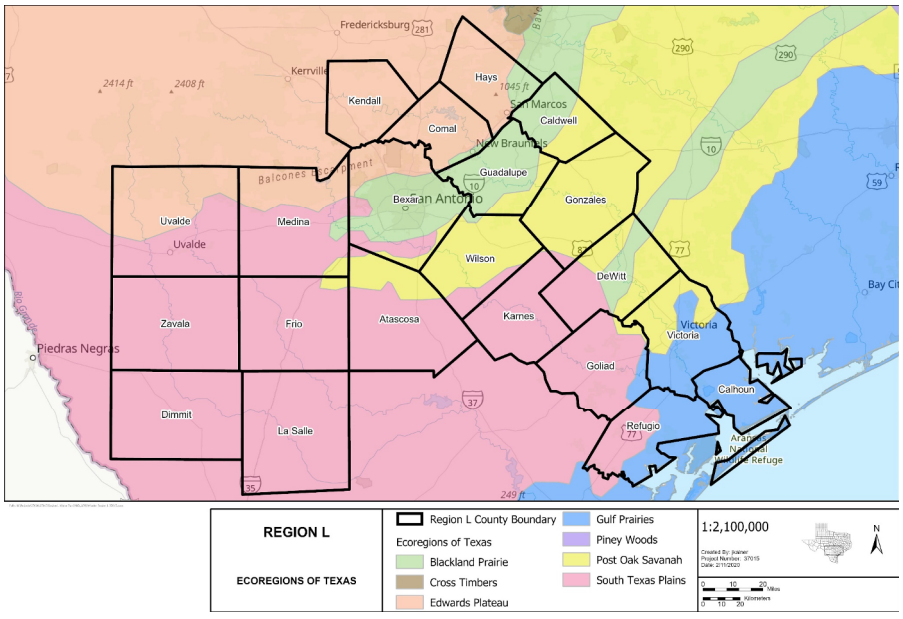
6.2.1 Regional Environment - Region L Ecoregions



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6.2.2 Environmental Effects Analysis

- In accordance with Environmental Subcommittee guiding principals, the analyses were streamlined and simplified.
- Matrix approach to evaluate potential impacts to:
  - Endangered and threatened species
  - Vegetation and land use
  - Aquatic resources
  - Cultural resources
- Qualitative analysis where higher scores equate to greater potential for impacts.
- Scores do not reflect project feasibility; address regulatory and permitting issues.

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Table 6-6. Summary of Potential Impacts to Endangered, Threatened, and Species of Greatest Conservation Need from Water Management Strategies

Number	Water Management Strategy	Final Decade Firm Yield (acft/yr)	Species Impact Score
10	SAWS Expanded Local Carrizo Project	21,000	4
11	SAWS Expanded Brackish Groundwater Project	70,160	7
12	ARWA/GBRA Project (Phase I)	30,000	24
13	ARWA Project (Phase 2)	21,000	16
14	ARWA Project (Phase 3)	5,584	16
15	GBRA Mid-Basin (Phase 2)	27,000	22
16	GBRA Lower Basin Storage	59,780	18
17	GBRA Lower Basin New Appropriation	40,500	18
18	GBRA Victoria Steam-Electric Project	23,925*	14
19	CRWA Wells Ranch (Phase 3)	7,000	10
20	CRWA Siesta Project	5,042	14
21	CRWA Brackish Carrizo-Wilcox Project	14,700	8
22	CVLGC Carrizo Project	10,000	14
23	SSLGC Expanded Carrizo Project	6,000	14
24	SSLGC Expanded Brackish Wilcox Project	5,000	6
25	NBU ASR	10,818	2
26	NBU Trinity Well Field Expansion	3,360	4
27	City of Victoria ASR	7,900	1
28	City of Victoria Groundwater-Surface Water Exchange	22,068	2
29	SS WSC Brackish Carrizo-Wilcox Project	1,120	4
30	Martindale Alluvial Well	240	18
31	Maxwell WSC Trinity Well	230	8
32	County Line SUD Trinity Well Field	740	12
33	County Line SUD Trinity Well Field	1,500	12

*The 23,925 acft yield for the Victoria Steam Electric project is encompassed within the 40,500 acft yield for GBRA Lower Basin New Appropriation. Scores range from 1 to 28.

6.2.2 Endangered, Threatened, and Species of Greatest Conservation Need

- Categorize each WMS based on overall project impacts:
  - 0 - No or negligible habitat impacts;
  - 1 - Minimal habitat impacts;
  - 2 - Moderate or greater potential habitat impacts.
- Multiply by the number of federal or state listed, or proposed listed, endangered and threatened species with potential habitat impacts for each water management strategy.

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Table 6-7. Summary of Potential Impacts to Vegetation and Land Use

Number	Water Management Strategy	Final Decade Firm Yield (acft/yr)	Habitat Impact Score
10	SAWS Expanded Local Carrizo Project	21,000	428
11	SAWS Expanded Brackish Groundwater Project	70,160	409
12	ARWA/GBRA Project (Phase I)	30,000	25661
13	ARWA Project (Phase 2)	21,000	3224
14	ARWA Project (Phase 3)	5,584	289
15	GBRA Mid-Basin (Phase 2)	27,000	5278
16	GBRA Lower Basin Storage	59,780	44055
17	GBRA Lower Basin New Appropriation	40,500	44962
18	GBRA Victoria Steam-Electric Project	23,925	651
19	CRWA Wells Ranch (Phase 3)	7,000	136
20	CRWA Siesta Project	5,042	217
21	CRWA Brackish Carrizo-Wilcox Project	14,700	1466
22	CVLGC Carrizo Project	10,000	4147
23	SSLGC Expanded Carrizo Project	6,000	438
24	SSLGC Expanded Brackish Wilcox Project	5,000	510
25	NBU ASR	10,818	0
26	NBU Trinity Well Field Expansion	3,360	0
27	City of Victoria ASR	7,900	0
28	City of Victoria Groundwater-Surface Water Exchange	22,068	0
29	SS WSC Brackish Carrizo-Wilcox Project	1,120	21
30	Martindale Alluvial Well	240	15
31	Maxwell WSC Trinity Well	230	278
32	County Line SUD Trinity Well Field	740	1602
33	County Line SUD Trinity Well Field	1,500	1602

*The 23,925 acft yield for the Victoria Steam Electric project is encompassed within the 40,500 acft yield for GBRA Lower Basin New Appropriation. Scores range from 1 to 28.

6.2.2 Vegetation and Land Use

- Categorize each WMS based on overall project impacts:
  - 0 - No or minor vegetation impacts;
  - 1 - Low to moderate impacts;
  - 2 - Moderate to high impacts.
- Multiply by the estimated area of non-urban vegetation impacts for each water management strategy.

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6.2 Ecologically Significant Stream Segments

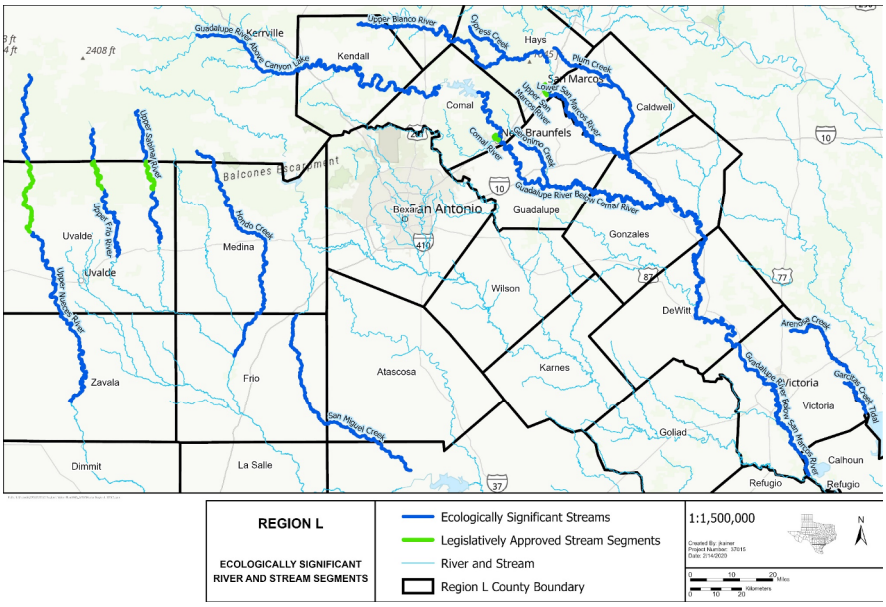

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Table 6-8. Summary of Potential Stream Construction Impacts

Number	Water Management Strategy	Final Decade Firm Yield (acft/yr)	Stream Impact Score
10	SAWS Expanded Local Carrizo Project	21,000	2
11	SAWS Expanded Brackish Groundwater Project	70,160	2
12	ARWA/GBRA Project (Phase I)	30,000	8
13	ARWA Project (Phase 2)	21,000	4
14	ARWA Project (Phase 3)	5,584	4
15	GBRA Mid-Basin (Phase 2)	27,000	8
16	GBRA Lower Basin Storage	59,780	8
17	GBRA Lower Basin New Appropriation	40,500	8
18	GBRA Victoria Steam-Electric Project	23,925	2
19	CRWA Wells Ranch (Phase 3)	7,000	1
20	CRWA Siesta Project	5,042	1
21	CRWA Brackish Carrizo-Wilcox Project	14,700	2
22	CVLGC Carrizo Project	10,000	8
23	SSLGC Expanded Carrizo Project	6,000	4
24	SSLGC Expanded Brackish Wilcox Project	5,000	0
25	NBU ASR	10,818	1
26	NBU Trinity Well Field Expansion	3,360	0
27	City of Victoria ASR	7,900	1
28	City of Victoria Groundwater-Surface Water Exchange	22,068	1
29	SS WSC Brackish Carrizo-Wilcox Project	1,120	0
30	Martindale Alluvial Well	240	1
31	Maxwell WSC Trinity Well	230	1
32	County Line SUD Trinity Well Field	740	1
33	County Line SUD Trinity Well Field	1,500	1

*The 23,925 acft yield for the Victoria Steam Electric project is encompassed within the 40,500 acft yield for GBRA Lower Basin New Appropriation. Scores range from 1 to 28.

6.2.2 Aquatic Resources – Stream Direct Construction Impacts

- Categorize each WMS based on overall project impacts:
  - 0 - No stream impacts;
  - 1 - Low to moderate impacts; or
  - 2 - Moderate to high impacts.
- Multiply by factor based on estimated number of stream crossings and structures:
  - 0 - No stream crossings or structures;
  - 1 - From 1 to 25 potential crossings and structures;
  - 2 - From 26 to 50 potential crossings and structures;
  - 3 - From 51 to 75 potential crossings and structures; or
  - 4 - 76 or more potential crossings and structures.

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Table 6-9. Summary of Potential Stream Flow Impacts

Number	Water Management Strategy	Final Decade Firm Yield (acft/yr)	Stream Impact Score
10	SAWS Expanded Local Carrizo Project	21,000	1
11	SAWS Expanded Brackish Groundwater Project	70,160	1
12	ARWA/GBRA Project (Phase I)	30,000	2
13	ARWA Project (Phase 2)	21,000	2
14	ARWA Project (Phase 3)	5,584	1
15	GBRA Mid-Basin (Phase 2)	27,000	6
16	GBRA Lower Basin Storage	59,780	6
17	GBRA Lower Basin New Appropriation	40,500	6
18	GBRA Victoria Steam-Electric Project	23,925	3
19	CRWA Wells Ranch (Phase 3)	7,000	1
20	CRWA Siesta Project	5,042	4
21	CRWA Brackish Carrizo-Wilcox Project	14,700	2
22	CVLGC Carrizo Project	10,000	2
23	SSLGC Expanded Carrizo Project	6,000	2
24	SSLGC Expanded Brackish Wilcox Project	5,000	1
25	NBU ASR	10,818	1
26	NBU Trinity Well Field Expansion	3,360	1
27	City of Victoria ASR	7,900	1
28	City of Victoria Groundwater-Surface Water Exchange	22,068	2
29	SS WSC Brackish Carrizo-Wilcox Project	1,120	1
30	Martindale Alluvial Well	240	2
31	Maxwell WSC Trinity Well	230	1
32	County Line SUD Trinity Well Field	740	1
33	County Line SUD Trinity Well Field	1,500	1

*The 23,925 acft yield for the Victoria Steam Electric project is encompassed within the 40,500 acft yield for GBRA Lower Basin New Appropriation. Scores range from 1 to 28.

6.2.2 Aquatic Resources – Stream Flow Impacts

- Categorize each WMS based on overall project impacts:
  - 0 - No stream impacts;
  - 1 - Low to moderate impacts; or
  - 2 - Moderate to high impacts.
- Multiply by factor based on assigning a point for each for the following that may apply:
  - Potential streamflow reductions;
  - Potential alterations to streamflow hydrograph (e.g. seasonal alterations);
  - Potential changes to bay inflows; and
  - Increased groundwater use in the Trinity or Carrizo-Wilcox aquifers.

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6.2.2 Cultural Resources

- As outlined Chapter 5-2, a cultural resources probability model was conducted for individual water management strategies based on conceptual project site locations. Results of the cultural resources assessment scores for all WMS are summarized in Table 6-10.

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6.2.2 Cultural Resources

Table 6-10 Summary of Potential Impacts to Cultural Resources from Water Management Strategies

Number	Water Management Strategy	Final Decade Firm Yield (acft/yr)	Cultural Resources Impact Score
10	SAWS Expanded Local Carrizo Project	21,000	13.5
11	SAWS Expanded Brackish Groundwater Project	70,160	32
12	ARWA/GBRA Project (Phase I)	30,000	187
13	ARWA Project (Phase 2)	21,000	54.5
14	ARWA Project (Phase 3)	5,584	187
15	GBRA Mid-Basin (Phase 2)	27,000	109.5
16	GBRA Lower Basin Storage	59,780	19
17	GBRA Lower Basin New Appropriation	40,500	174
18	GBRA Victoria Steam-Electric Project	23,925	46
19	CRWA Wells Ranch (Phase 3)	7,000	15
20	CRWA Siesta Project	5,042	91.5
21	CRWA Brackish Carrizo-Wilcox Project	14,700	109.5
22	CVLGC Carrizo Project	10,000	97
23	SSLGC Expanded Carrizo Project	6,000	103
24	SSLGC Expanded Brackish Wilcox Project	5,000	137.5
25	NBU ASR	10,818	50
26	NBU Trinity Well Field Expansion	3,360	67.5
27	City of Victoria ASR	7,900	-*
28	City of Victoria Groundwater-Surface Water Exchange	22,068	88
29	SS WSC Brackish Carrizo-Wilcox Project	1,120	11
30	Martindale Alluvial Well	240	85
31	Maxwell WSC Trinity Well	230	73
32	County Line SUD Trinity Well Field	740	237
33	County Line SUD Brackish Edwards	1,500	237

*A high cultural resources score, 2,243.5, was calculated using the entire City of Victoria as a conceptual project area. The project proposes to primarily use existing facilities. Scores range from 11 to 2,243.5 (second highest score 237).

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6.3 Impacts on Key Water Quality Parameters

Table 6-11 Summary of Potential Impacts to Water Quality Parameters from Water Management Strategy Types

Water Quality Parameter	Water Management Strategy Type							
	Expanded Use of Surface Water	New Reservoirs	Ground-water-Surface Water Exchange	Expanded Use of Groundwater ASR		Indirect Reuse	Voluntary Redistribution	Water Conservation
TDS	●	●	●	●		●	●	
Dissolved Oxygen	●	●		●		●	●	
pH	●	●	●	●		●	●	
Bacteria	●	●		●		●	●	
Temperature	●	●	●	●		●	●	
Nitrates	●	●		●		●	●	

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6.3 Impacts on Key Water Quality Parameters

- Brief discussion of pathways for water quality changes to potentially affect wildlife species/habitats:
  - Many fish and freshwater mussel species are sensitive to changes in dissolved oxygen, temperature, salinity and ammonia nitrogen.
  - These parameters may be exacerbated in low flow and drought conditions.

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6.4 Impacts of Voluntary Redistribution of Water from Rural and Agricultural Areas

- Potential impacts of voluntary redistribution:
  - Potentially result in changes to crop species, productivity, or amount of area in crop production.
  - Drawdown of the water table, increasing local area pump lifts in the aquifer areas from which groundwater would be obtained.
  - Provide payments to landowners to groundwater and to holders of surface water rights.
  - Positive economic impact of project construction to local rural areas.

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6.4 Impacts of Voluntary Redistribution of Water

- Water from rural and agricultural areas that may be used for other purposes in more urban areas in the future
- WMS that may involve voluntary redistribution of water from rural and agricultural areas include:
  - Edwards Transfers
  - Local Groundwater Conversions
  - All WMS in the Wilson County Carrizo-Wilcox Aquifer
- Economic benefits, nor the subsequent economic development that might result from urbanization are estimated due to lack of information

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6.5 Social and Economic Impacts of Not Meeting Projected Water Needs

- If none of the projected water needs are met:
  - Economic Impacts

	2020	2030	2040	2050	2060	2070
Income Losses*	$ 16,571.30	$ 17,264.20	$ 14,599.51	$ 11,679.18	$ 9,674.50	$ 9,384.38
Job Losses	100,514	107,453	96,710	86,976	85,393	94,978

* (Million $)

  - Social Impacts

	2020	2030	2040	2050	2060	2070
Consumer Surplus Losses	$ 67	$ 80	$ 118	$ 184	$ 342	$ 651
Population Losses	18,454	19,728	17,756	15,969	15,678	17,438

* (Million $)

- The 2021 Unmet irrigation and mining needs would represent only about 1% of the potential income losses in 2070 considering projected shortages in all water use sectors

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6.6 Impacts on Navigation

- No effects on navigation are anticipated from implementation of the 2021 Regional Water Plan

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6.7 Environmental Benefits and Concerns

- Environmental Benefits
  - Emphasis on conservation, drought management, reuse, groundwater development, and use of existing surface water rights avoids or delays projects with greater impacts.
  - Implementation of the Edwards Aquifer Habitat Conservation Plan and development of non-Edwards supplies contribute to springflow maintenance and endangered species protection.
  - Plan avoids impacts associated with development of new mainstem reservoirs.
  - Increased reliance on Aquifer Storage and Recovery (ASR) facilitates storage during wet periods for use during dry periods without evaporation and minimal terrestrial habitat losses.
  - Increased reliance on brackish groundwater resources, potentially reducing reliance on fresh groundwater.
  - Projects will not exceed environmental flow standards.

6.7 Environmental Benefits and Concerns

- Environmental Concerns
  - Reductions in instream flows and freshwater inflows to bays and estuaries associated with water supply projects.
  - Projects located in stream segments identified by TPWD as ecologically significant.
  - Effects on small springs and reductions in flow entering streams from aquifers associated with groundwater development.
  - Potential interaction of climate variability with other identified impacts.

11. Discussion Regarding Comments Received to Date on the Region L Water Plan Chapters

12. Discussion and Appropriate Action to Adopt and Submit 2021 Initially Prepared Plan (IPP) and Authorization for the Consultant to Address Any Planning Group Changes to the IPP Document Prior to Submitting to the TWDB

BUILDING A WORLD OF DIFFERENCE

2021 Initially Prepared Plan for the SCTRWPG

Regional Water Planning Group Meeting
February 20, 2020

BUILDING A WORLD OF DIFFERENCE®

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Chapters of the Regional Water Plan

No.	Name
1	Planning Area Description
2	Population and Water Demand Projections
3	Water Supply Analyses
4	Identification of Water Needs
5	Evaluation and Recommendation of Water Management Strategies
6	Impacts of the Regional Water Plan and Consistency with Protection of Resources
7	Drought Response Information, Activities, and Recommendations
8	Policy Recommendations and Unique Sites
9	Water Infrastructure Funding Recommendations
10	Public Participation and Plan Adoption
11	Implementation and Comparison to the Previous Regional Water Plan

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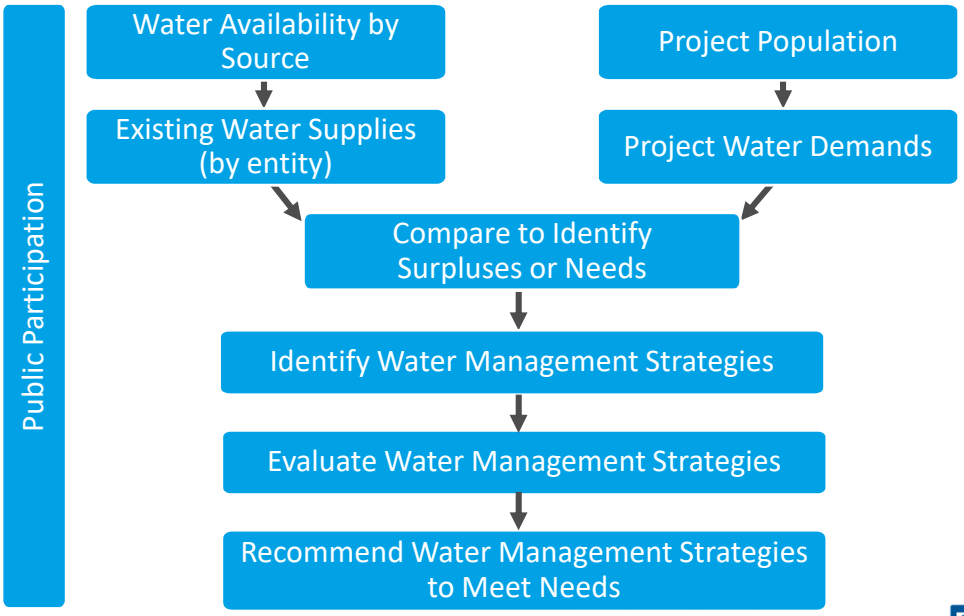
Planning Process



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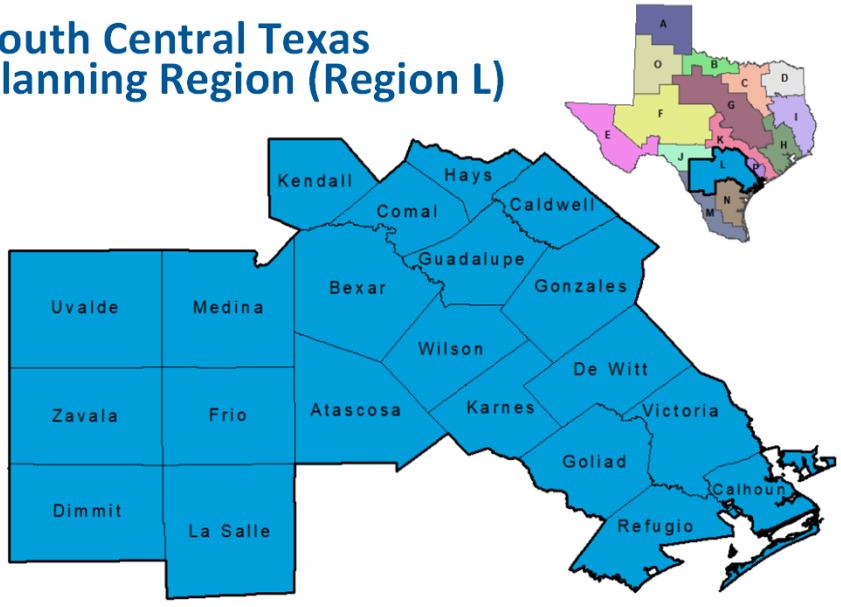
South Central Texas Planning Region (Region L)



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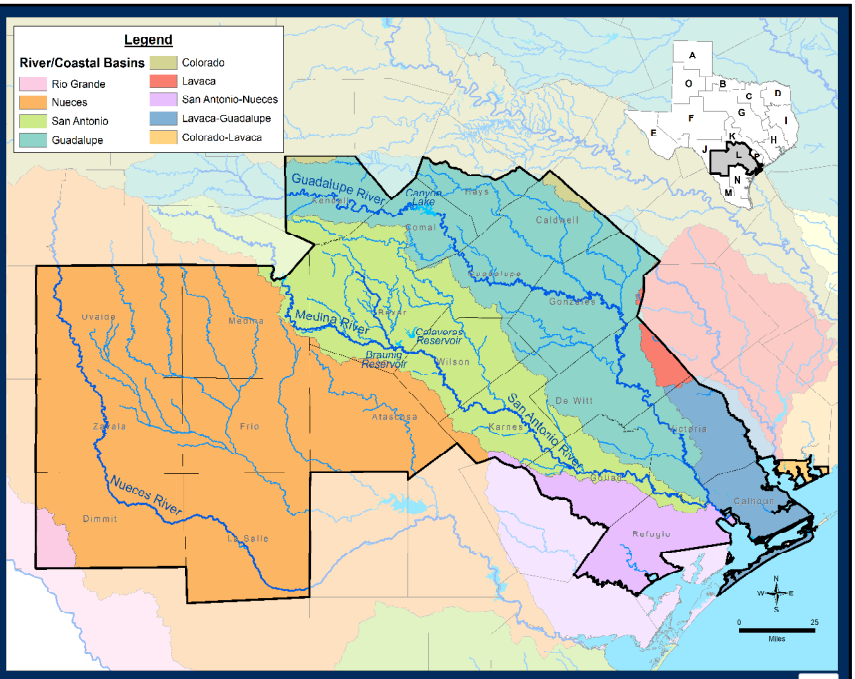
Chapter 1: Planning Area Description

Figure 1-8 Major River Basins



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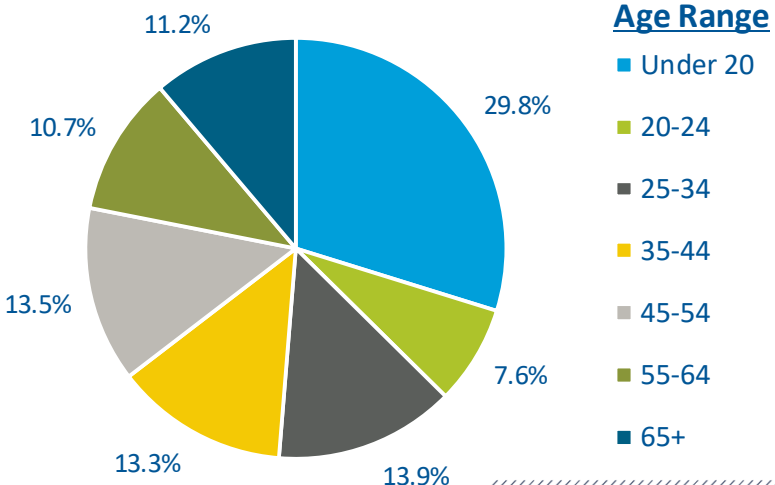
Chapter 1: Planning Area Description

Figure 1-4 Population Distribution by Age Group (2010)



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Chapter 1: Planning Area Description

Major Water Providers

Determined by the SCTRWPG to be any WWP, or municipal WUG, including river authorities and irrigation districts, that has water demands greater than 20,000 acft/yr by 2070.

Alliance Regional Water Authority (ARWA)	San Antonio Water System (SAWS);
Canyon Regional Water Authority (CRWA)	City of San Marcos
Cibolo Valley Local Government Corporation (CVLGC);	Schertz-Sequin Local Government Corporation (SSLGC)
Guadalupe-Blanco River Authority (GBRA);	City of Victoria
New Braunfels Utilities (NBU)	

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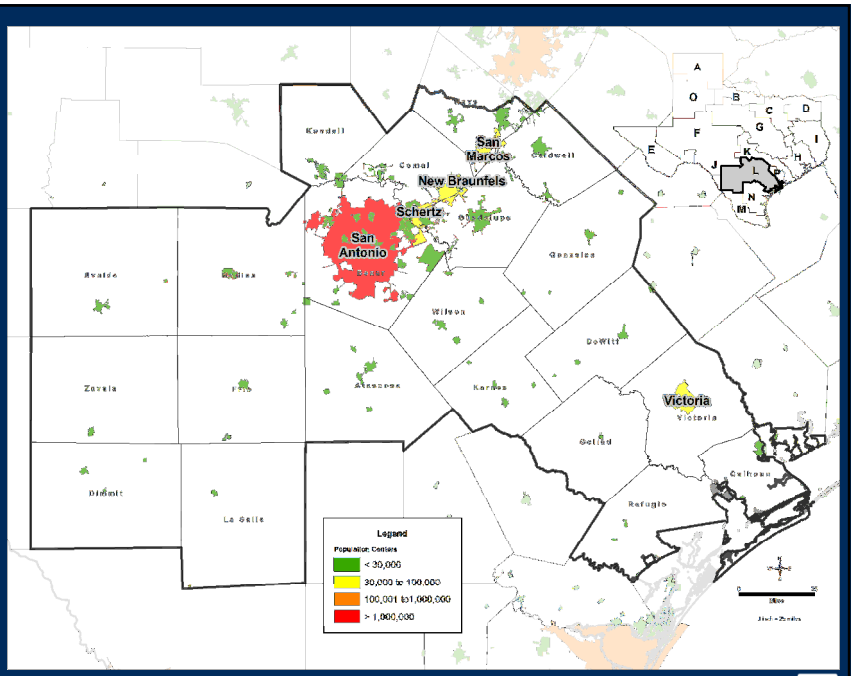
Chapter 1: Planning Area Description

Figure 1-2 Population Centers



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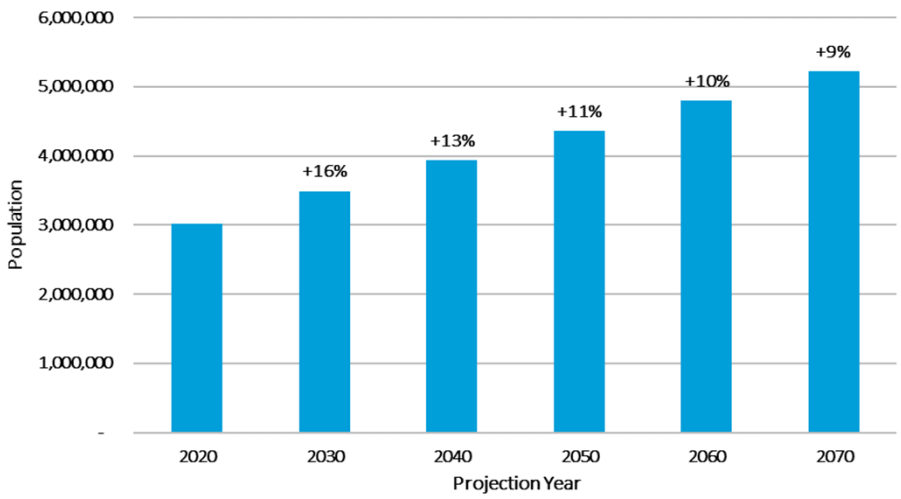
Chapter 2: Population and Water Demand Projections

Figure 2-1 South Central Texas Region Population



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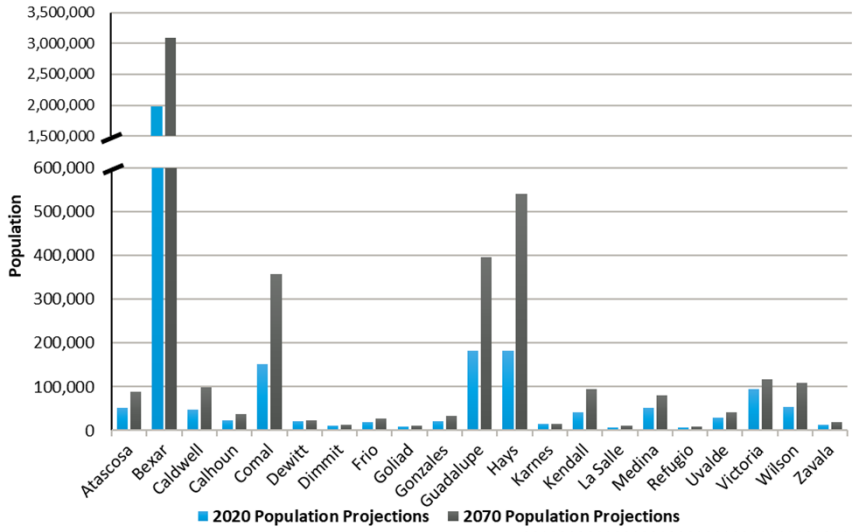
Chapter 2: Population and Water Demand Projections

Figure 2-2 Population Projections by County



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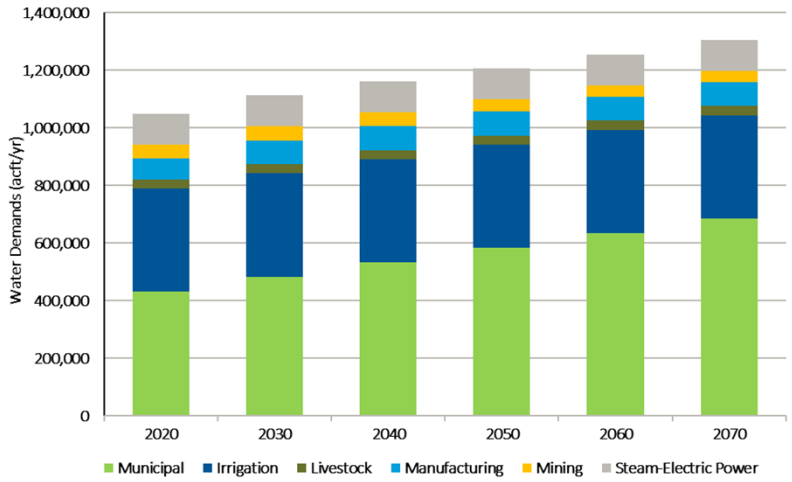
Chapter 2: Population and Water Demand Projections

Figure 2-3 Water Demand Projections by Use Sector



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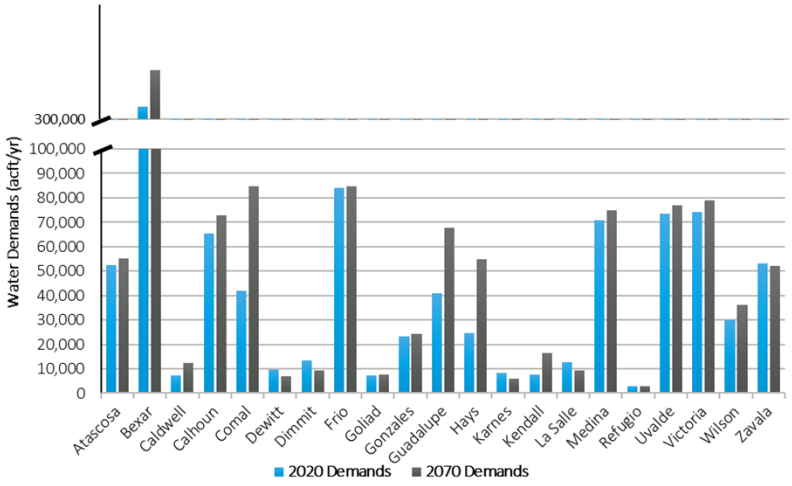
Chapter 2: Population and Water Demand Projections

Figure 2-4 Water Demand Projections by County



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Chapter 2: Population and Water Demand Projections

Figure 2-11 Population Per Capita Water Use and Municipal Water Demands

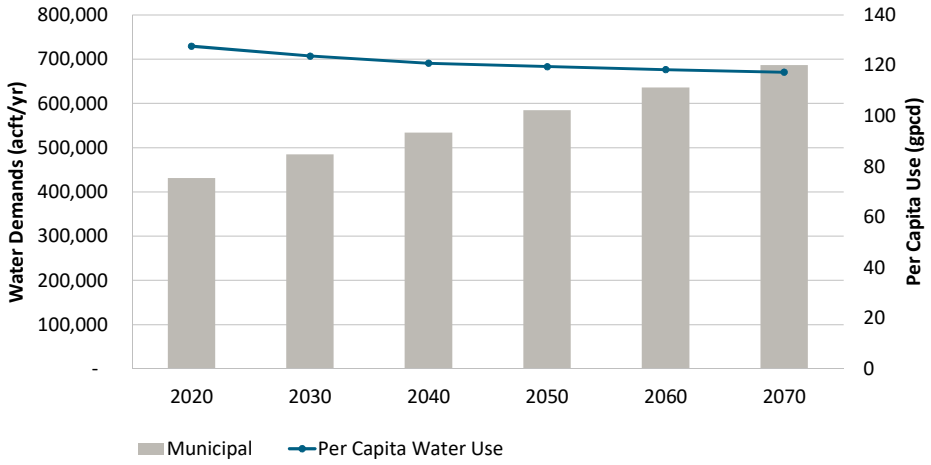

Figure 2-11

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Chapter 3: Water Supply Analyses

Sources of Supply

Groundwater

- Major Aquifers
  - Edwards
  - Carrizo-Wilcox
  - Trinity
  - Gulf Coast
- Minor Aquifers
  - Sparta
  - Queen City
  - Yegua-Jackson

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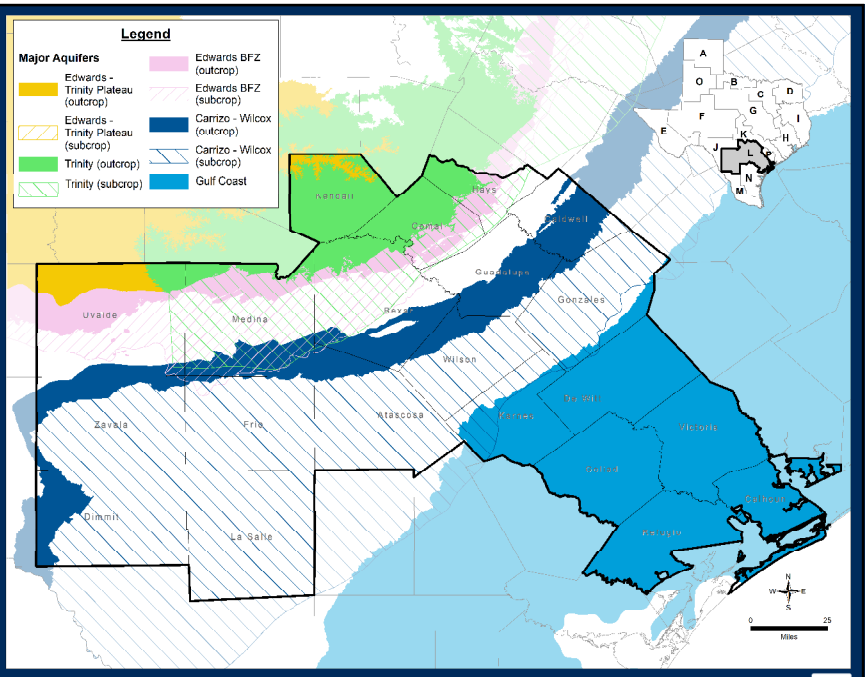
Chapter 3: Water Supply Analyses

Figure 3-1 Major Aquifers



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Chapter 3: Water Supply Analyses

Sources of Supply (con't)

- **Surface Water**
  - Canyon Reservoir
  - Calaveras Lake
  - Coleto Creek Reservoir
  - Lake Braunig
  - Medina Lake System
  - Run-of-River Water Rights
    - Nueces, San Antonio, and Guadalupe River Basins
- **Reuse/Recycled Water**

LJ2

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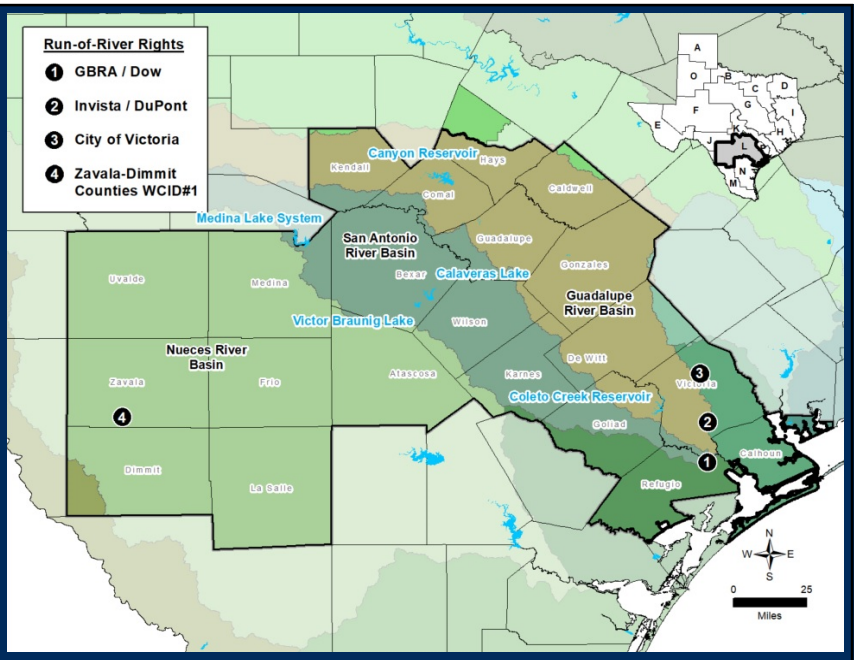
Slide 16

LJ2 We don't currently describe ASR in Chapter 3 so I believe we should take it out of the presentation. Can probably acknowledge verbally

Lagade, Junior, 2/12/2020

Chapter 3: Water Supply Analyses

Figure 3-3 Major River Basins, Reservoirs, and Run-of-River Rights



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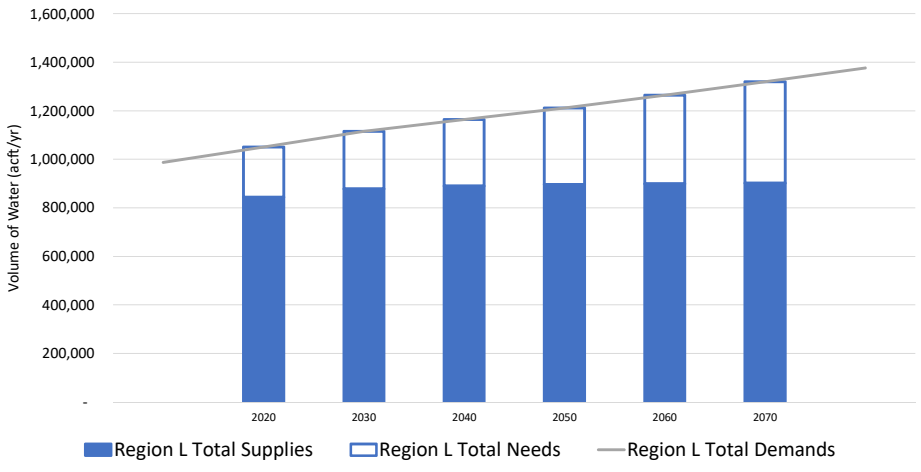
Chapter 4: Water Needs Analyses

Figure 4-1 Total Regional Needs



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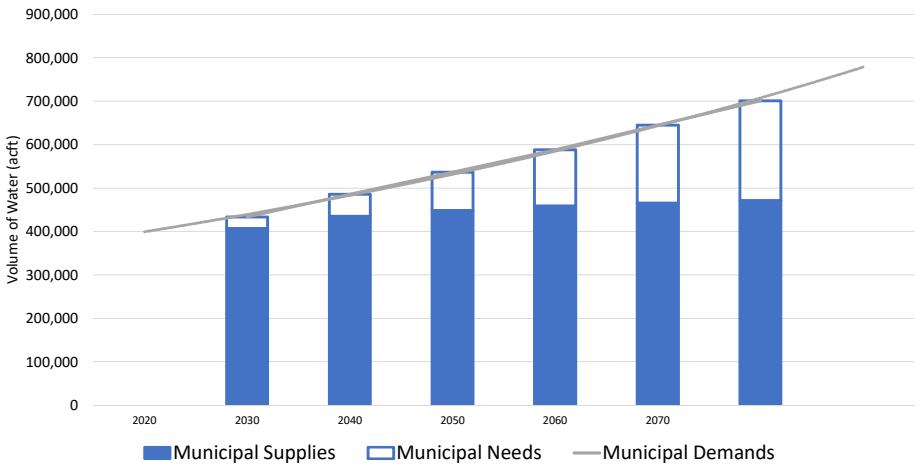
Chapter 4: Water Needs Analyses

Figure 4-2 Municipal Needs



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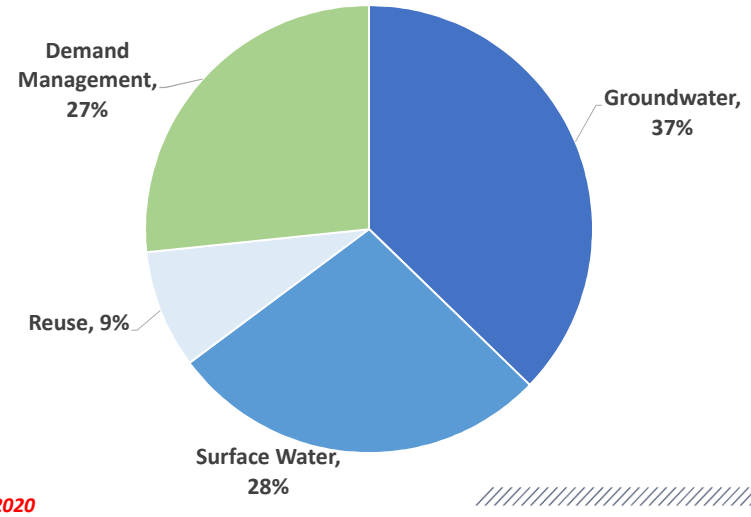
Chapter 5: Evaluation and Recommendation of Water Management Strategies

WMS Supplies in 2070: 628,344 acft/yr



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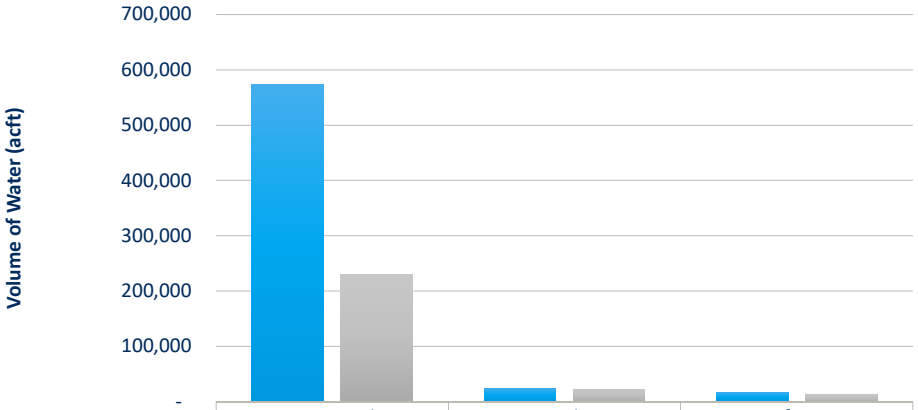
Chapter 5: Evaluation and Recommendation of Water Management Strategies

2070 WMS Supplies and Needs by Use Category



	Municipal	Steam-Electric	Manufacturing
Total WMS Supplies	573,808	23,925	16,817
Total Needs	229,740	21,707	13,072

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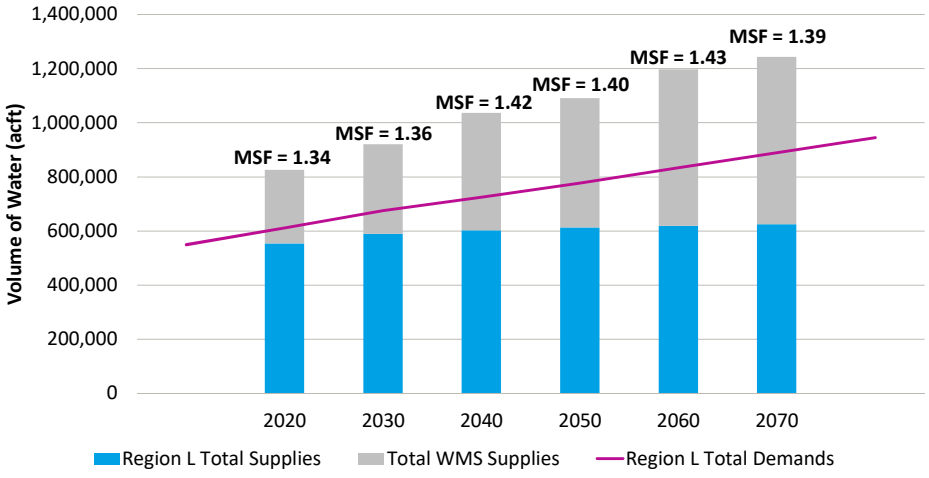
Chapter 5: Evaluation and Recommendation of Water Management Strategies

Supplies, WMS Supplies, and Management Supply Factor (MSF)*



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* Includes only Municipal, Steam-Electric, and Manufacturing

Chapter 5: Evaluation and Recommendation of Water Management Strategies

Recommended Water Management Strategies

- Advanced Water Conservation
  - Various WUGs
  - ~29,000 acft/yr (2020) to ~167,400 acft/yr (2070)
- Drought Management
  - All municipal WUGs with Needs in 2020
  - ~14,000 acft/yr only in 2020 decade
- Reuse
  - WUGs: Boerne, CCMA, County Line SUD, Fair Oaks Ranch, Kendall County WCID 1, Kyle, NBU, SAWS, Seguin, & San Marcos
    - ~8,300 acft/yr (2020) to ~53,700 acft/yr (2070)
  - ARWA Project (Phase 3)
    - 5,600 acft/yr (2060 thru 2070)

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Chapter 5: Evaluation and Recommendation of Water Management Strategies

Recommended Water Management Strategies (cont'd)

- Fresh Groundwater
  - ARWA/GBRA Project (Phase 1)
    - 30,000 acft/yr (2020 thru 2070)
  - ARWA Project (Phase 2)
    - 21,000 acft/yr (2040 thru 2070)
  - CRWA Wells Ranch Phase 3 Project
    - 3,500 acft/yr (2020) to 7,000 acft/yr (2070)

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Chapter 5: Evaluation and Recommendation of Water Management Strategies

Recommended Water Management Strategies (cont'd)

- **Fresh Groundwater (cont'd)**
  - Local Groundwater – Gen. WUGs
    - ~11,200 acft/yr (2020) to ~30,500 acft/yr (2070)
  - Martindale WSC Alluvial Well
    - 240 acft/yr (2020 thru 2070)
  - NBU Trinity Well Field Expansion
    - 3,360 acft/yr (2030 thru 2070)
  - SAWS Expanded Local Carrizo Project
    - 21,000 acft/yr (2030 thru 2070)
  - SSLGC Expanded Carrizo Project
    - 6,000 acft/yr (2020 thru 2070)

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Chapter 5: Evaluation and Recommendation of Water Management Strategies

Recommended Water Management Strategies (cont'd)

- **Brackish Groundwater**
  - CRWA Brackish Carrizo-Wilcox Project
    - 14,700 acft/yr (2030 thru 2070)
  - CVLGC Carrizo Project
    - 10,000 acft/yr (2030 thru 2070)
  - County Line WSC Trinity Well Field
    - 500 acft/yr (2050) to 740 acft/yr (2070)
  - County Line WSC Brackish Edwards Project
    - 500 acft/yr (2050) to 1,500 acft/yr (2070)
  - Maxwell WSC Trinity Wellfield
    - 320 acft/yr (2040 thru 2070)

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Chapter 5: Evaluation and Recommendation of Water Management Strategies

Recommended Water Management Strategies (cont'd)

- **Brackish Groundwater (cont'd)**
  - SAWS Expanded Brackish GW Project
    - 20,160 acft/yr (2040) to 70,160 acft/yr (2070)
  - SSLGC Brackish Wilcox Project
    - 5,000 acft/yr (2040 thru 2070)
  - S S WSC Brackish Wilcox Groundwater Project
    - 1,120 acft/yr (2060 thru 2070)

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Chapter 5: Evaluation and Recommendation of Water Management Strategies

Recommended Water Management Strategies (cont'd)

- **Surface Water**
  - CRWA Siesta Project
    - 5,042 acft/yr (2060 thru 2070)
  - GBRA Lower Basin New Appropriation*
    - 40,500 acft/yr (2020 thru 2070)
  - GBRA Mid-Basin Project (Phase 2)**
    - 27,000 acft/yr (2030 thru 2070)
  - GBRA Victoria County Steam-Electric Project
    - 23,925 acft/yr (2020 thru 2070; from LBNA)

** Indicates Guadalupe River surface water diverted to new off-channel reservoir*
*** Indicates inclusion of ASR component*

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Chapter 5: Evaluation and Recommendation of Water Management Strategies

Recommended Water Management Strategies (cont'd)

- **Surface Water (cont'd)**
  - City of Victoria Groundwater/Surface Water Exchange*
    - 22,068 acft/yr (2020 thru 2070)
  - City of Victoria ASR Project**
    - 7,900 acft/yr (2020 thru 2070)

** Indicates offset of groundwater supply with additional surface water rights*
*** Indicates ASR supplied by Guadalupe River diversion*

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Chapter 5: Evaluation and Recommendation of Water Management Strategies

Recommended Water Management Strategies (cont'd)

- **New Reservoirs (Off-Channel)**
  - GBRA Lower Basin Storage
    - 59,780 acft/yr (2020 thru 2070)
  - GBRA Lower Basin New Appropriation*
    - 40,500 acft/yr (2020 thru 2070)

** Indicates Guadalupe River surface water diverted to new off-channel reservoir*

Chapter 5: Evaluation and Recommendation of Water Management Strategies

Recommended Water Management Strategies (cont'd)

- **Aquifer Storage & Recovery (ASR)**
  - GBRA Mid-Basin Project (Phase 2)*
    - 27,000 acft/yr (2030 thru 2070)
  - NBU ASR Project
    - 10,818 acft/yr (2020 thru 2070)
  - City of Victoria ASR Project*,**
    - 7,900 acft/yr (2020 thru 2070)

** Indicates original supply source from Guadalupe River*
*** Indicates Guadalupe River diversion supplies ASR*

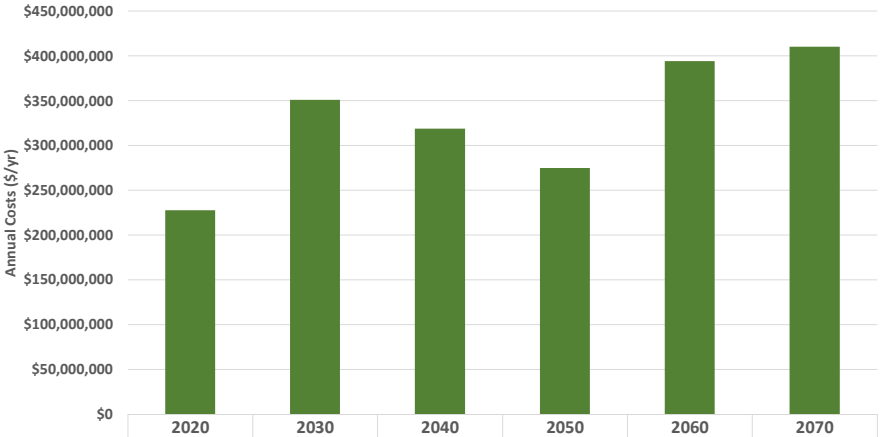
Chapter 5: Evaluation and Recommendation of Water Management Strategies

Recommended Water Management Strategies (cont'd)

- **Reallocation and Management of Existing Sources**
  - Edwards Transfers
    - WUGs that access Edwards Aquifer
    - ~5,000 acft/yr (2020) to ~5,300 acft/yr (2070)
  - Facilities Expansions
    - WUGs that reported plans to increase capacity, not new supply
  - Local Groundwater Conversions
    - WUGs that only have GW access and are MAG limited

Chapter 5: Evaluation and Recommendation of Water Management Strategies

WMS Total Annual Costs by Decade for Region L



	2020	2030	2040	2050	2060	2070
Total Annual Costs	$227,702,192	$350,647,235	$318,838,529	$274,839,150	$393,997,850	$409,984,894

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Chapter 5: Evaluation and Recommendation of Water Management Strategies

Estimated Unit Costs of WMS (1 of 2)

No.	WMS	Annual Unit Cost ($/acft)
1	Drought Management	$88
2	GBRA Lower Basin Storage	$110
3	SAWS Expanded Local Carrizo	$224
4	Local Groundwater	$285
5	City of Victoria ASR Project	$385
6	Victoria County Steam-Electric Project	$440
7	NBU ASR Project	$462
8	Martindale WSC Alluvial Well	$463
9	ARWA Project (Phase 2)	$635
10	GBRA Lower Basin New Appropriation	$658
11	SSLGC Brackish Wilcox Project	$663
12	NBU Trinity Well Field Expansion	$685
13	Advanced Water Conservation	$745

Chapter 5: Evaluation and Recommendation of Water Management Strategies

Estimated Unit Costs of WMS (2 of 2)

No.	WMS	Annual Unit Cost ($/acft)
14	CRWA Wells Ranch Phase 3	$1,012
15	ARWA/GBRA Project (Phase 1)	$1,099
16	SSLGC Expanded Carrizo Project	$1,207
17	CVLGC Carrizo Project	$1,230
18	Edwards Transfers	$1,242
19	County Line WSC Brackish Edwards Project	$1,330
20	SAWS Expanded Brackish Groundwater Project	$1,463
21	GBRA Mid-Basin Project (Phase 2)	$1,492
22	CRWA Brackish Carrizo-Wilcox	$1,595
23	ARWA Project (Phase 3)	$1,995
24	County Line WSC Trinity Well Field	$2,078
25	CRWA Siesta Project	$2,470
26	S S WSC Brackish Wilcox Project	$2,911
27	Maxwell WSC Trinity Well Project	$4,261

Municipal WUGs: No Unmet Needs (1 of 2)

NO.	WUG	COUNTY	SHORTAGES (ACFT/YR) 2020	2030	2040	2050	2060	2070	RESOLUTION
1	Air Force Village II Inc.	Bexar	(86)	(93)	(93)	(76)	(61)	(54)	Purchase water from SAWS
2	Alamo Heights	Bexar	(736)	(669)	(490)	(329)	(183)	(53)	Edwards Transfers
3	Atascosa Rural WSC	Bexar	(758)	(1,049)	(1,264)	(1,481)	(1,675)	(1,811)	Local Groundwater Conversions
4	Bexar County WCID 10	Bexar	(311)	(278)	(213)	(170)	(170)	(169)	Purchase water from SAWS
5	Canyon Lake Water Service	Comal	0	0	0	0	0	(165)	Purchase water from GBRA
6	Converse	Bexar	(232)	(525)	(698)	(672)	(663)	(651)	Purchase water from CRWA
7	County-Other, Victoria	Victoria	(831)	(891)	(936)	(1,000)	(1,080)	(1,151)	Purchase water from GBRA
8	Creedmoor-Maha WSC	Caldwell	(142)	(171)	(194)	(222)	(251)	(280)	Coordination with Region K
9	El Oso WSC	Karnes	(84)	(61)	0	0	(92)	(82)	Local GW w/ Region N
10	Elmendorf	Bexar	(31)	(118)	(199)	(277)	(335)	(384)	Purchase water from SAWS

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Municipal WUGs: No Unmet Needs (2 of 2)

NO.	WUG	COUNTY	SHORTAGES (ACFT/YR) 2020	2030	2040	2050	2060	2070	RESOLUTION
11	Fort Sam Houston	Bexar	(1,589)	(1,218)	(852)	(505)	(179)	0	Purchase water from SAWS
12	Kirby	Bexar	(148)	(244)	(219)	(210)	(207)	(205)	Purchase water from SAWS
13	Leon Valley	Bexar	(146)	(201)	(240)	(544)	(573)	(594)	Edwards Transfers
14	Live Oak	Bexar	(352)	(298)	(263)	(229)	(195)	(163)	Purchase water from SAWS
15	Marion	Guadalupe	0	0	(3)	(44)	(88)	(131)	Purchase water from CRWA
16	Martindale WSC	Caldwell	0	(40)	(127)	(238)	(378)	(540)	Purchase water from CRWA
17	S S WSC	Wilson	(330)	(1,108)	(1,867)	(2,640)	(2,464)	(2,854)	Purchase water from CRWA
18	Selma	Bexar	0	0	0	(39)	(71)	(94)	Edwards Transfers
19	Shavano Park	Bexar	(175)	(237)	(237)	(229)	(212)	(189)	Edwards Transfers
20	The Oaks WSC	Bexar	(201)	(239)	(277)	(311)	(340)	(363)	Purchase water from SAWS
21	Universal City	Bexar	(107)	(314)	(256)	(224)	(150)	(76)	Edwards Transfers

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Non-municipal WUGS: Some Irrigation and Mining Unmet Needs

NO.	WUG	COUNTY	SHORTAGES (ACFT/YR) 2020	2030	2040	2050	2060	2070	RESOLUTION
1	Irrigation, Bexar	Bexar	(834)	(834)	(834)	(834)	(834)	(834)	Unmet Need
2	Irrigation, Calhoun	Calhoun	(14,088)	(14,088)	(14,088)	(14,088)	(14,088)	(14,088)	Unmet Need
3	Irrigation, DeWitt	DeWitt	(266)	(247)	(61)	0	0	0	Unmet Need
4	Irrigation, Dimmit	Dimmit	(5,249)	(5,249)	(5,249)	(5,249)	(5,249)	(5,249)	Unmet Need
5	Irrigation, Frio	Frio	0	0	(1,838)	(3,612)	(5,332)	(7,146)	Unmet Need
6	Irrigation, Karnes	Karnes	(444)	(444)	(1,003)	(1,003)	(1,003)	(1,003)	Unmet Need
7	Irrigation, La Salle	La Salle	(1,184)	(1,203)	(1,223)	(1,248)	(1,271)	(1,294)	Unmet Need
8	Irrigation, Medina	Medina	(37,286)	(37,992)	(37,804)	(38,398)	(38,475)	(39,493)	Unmet Need
9	Irrigation, Uvalde	Uvalde	(42,779)	(43,091)	(43,091)	(43,181)	(43,430)	(43,859)	Unmet Need
10	Irrigation, Wilson	Wilson	0	0	0	0	(153)	(453)	Unmet Need
11	Irrigation, Zavala	Zavala	(21,235)	(21,350)	(21,109)	(20,733)	(20,148)	(19,865)	Unmet Need
12	Manufacturing, Comal	Comal	(2,786)	(3,768)	(3,768)	(3,768)	(3,768)	(3,768)	Purchase water from GBRA
13	Manufacturing, Guadalupe	Guadalupe	0	(387)	(387)	(387)	(387)	(387)	Purchase water from GBRA
14	Mining, Dimmit	Dimmit	(4,224)	(4,312)	(3,652)	(2,144)	(639)	0	Unmet Need
15	Mining, Karnes	Karnes	(1,928)	(1,356)	(764)	(179)	0	0	Unmet Need
16	Steam Electric Power, Bexar	Bexar	(2,782)	(2,782)	(2,782)	(2,782)	(2,782)	(2,782)	Purchase water from SAWS

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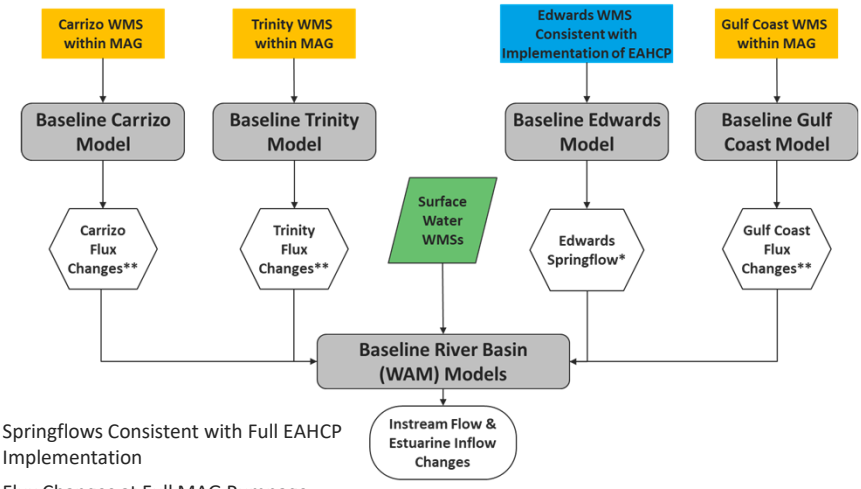
Chapter 6: Impacts of the Regional Water Plan and Consistency with Protection of Resources

Cumulative Effects of RWP Implementation



* Springflows Consistent with Full EAHCP Implementation

** Flux Changes at Full MAG Pumpage Levels

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Chapter 7: Drought Response Information, Activities, and Recommendations

Drought Contingency Plans (DCPs)

- Evaluated 26 DCPs
  - 12 rely solely on groundwater
  - 1 relies solely on surface water
  - 13 rely on both groundwater and surface water
- Most Reported Triggers:
  - Demand/Capacity Based
  - Failure/Contamination
- Most Reported Drought Response Strategies:
  - Irrigation Schedule
  - Prohibited Use

Summary of DCPs in Appendix 7-A

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Chapter 7: Drought Response Information, Activities, and Recommendations

Existing Emergency Interconnects, By the Numbers

2016 SCTRWP

- 25 WUGs responded to surveys and emails
- 35 existing interconnections
- 19 WUGs have 1 identified emergency interconnection
- 3 WUGs have 2 identified emergency interconnections
- 3 WUGs have 3 identified emergency interconnections

2021 SCTRWP

- 38 WUGs responded to emailed survey
- 51 existing interconnections
- 30 WUGs have 1 identified emergency interconnection
- 6 WUGs have 2 identified emergency interconnections
- 3 WUGs have 3 identified emergency interconnections

Summary in Appendix 7-B

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Chapter 7: EXISTING Emergency Interconnections (1 of 3)

No.	Emergency User	Emergency Provider
1	90 Ranch WSC	East Medina County SUD
2	Alamo Heights	SAWS
3	Benton City WSC	Lytle
4	Cadillac Water	SAWS
5	Cibolo	Green Valley SUD
6	City of Seguin	Springs Hill WSC
7	Creedmoore-Maha WSC	Aqua WSC
8	Creedmoore-Maha WSC	City of Austin
9	Crystal Clear	Springs Hill WSC
10	East Central SUD	La Vernia
11	East Central SUD	Springs Hill WSC
12	East Medina County SUD Unit 1	Natalia
13	El Oso WSC	Karnes City
14	Fair Oaks Ranch	SAWS
15	Gonzales County WSC	City of Smiley
16	Gonzales County WSC	City of Gonzales
17	Green Valley SUD	City of Cibolo
18	Green Valley SUD	Schertz
19	Green Valley SUD	Springs Hill WSC
20	Kyle	City of San Marcos

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Chapter 7:
EXISTING Emergency Interconnections (2 of 3)

No.	Emergency User	Emergency Provider
21	Leon Valley	SAWS
22	Live Oak	SAWS
23	Live Oak	Selma
24	Live Oak	Universal City
25	Lytle	Benton City WSC
26	Marion	Canyon Regional Water Authority
27	Marion	Green Valley SUD
28	Martindale WSC	Maxwell WSC
29	Medina County WCID 2	West Medina WSC
30	Natalia	East Medina County WSC
31	Oak Village North	Rim Rock Ranch
32	Polonia WSC	Polonia WSC North
33	Polonia WSC North	Lockhart
34	Polonia WSC South	Lockhart
35	Rim Rock Ranch	Oak Village North
36	Schertz	SAWS
37	Selma	Live Oak
38	Selma	Universal City
39	Shavano Park	SAWS
40	Smiley	Gonzales WSC

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Chapter 7:
EXISTING Emergency Interconnections (3 of 3)

No.	Emergency User	Emergency Provider
41	South Buda WCID 1	Southwest Water Co.
42	Southwest Water Co.	SAWS
43	Springs Hill WSC	Canyon Regional WA
44	Springs Hill WSC	City of Sequin
45	Springs Hill WSC	Green Valley SUD
46	Stockdale	Sunko WSC
47	Sunko WSC	Stockdale
48	The Oaks WSC	SAWS
49	West Medina WSC	D'Hanis
50	West Medina WSC	Hondo
51	Yancey WSC	SAWS

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Chapter 7: POTENTIAL Emergency Interconnections

No.	Emergency User	Emergency Provider
1	Atascosa Rural WSC	East Medina SUD
2	Cibolo	Schertz
3	County Line SUD	City of Kyle
4	Crystal Clear WSC	San Marcos
5	Crystal Clear WSC	NBU
6	East Medina County SUD	Atascosa Rural WSC
7	Texas State University	San Marcos
8	Wimberley WSC	Aqua WSC

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Chapter 8: Policy Recommendations and Unique Sites

- Developed by the SCTRWPG Policy Recommendations Work Group
- Includes regulatory, administrative and legislative recommendations
- Examples:
  - Recommends other RWPGs to develop similar Guiding Principles
  - Continued or augmented funding for:
    - Updating GAMs every ten years
    - Updating periods of record for WAMs
    - Water quality monitoring of designated unique stream segments

Chapter 9: Water Infrastructure Funding Recommendations

- Includes placeholder that this will be performed after IPP is submitted

Chapter 10: Public Participation and Plan Adoption

Summarizes planning, coordination, public hearings and comments with responses, and IPP through final submittal.

- Relevant Portions in IPP:
  - Workgroups
    - Environmental Assessment; Effluent, Modeling, and Reuse; Innovative Strategies; Major Water Providers; Minimum Standards; Policy Recommendations; Staff Workgroup; and Public Comment and Plan Assessment
  - Coordination with WUGs and WWPs
  - Coordination with Other Planning Regions
    - Region G, K, M, N, and P

Chapter 11: Implementation and Comparison to the Previous Regional Water Plan

- Summary of implementation of 2016 RWP WMSs

WUG/WWP	Projects Implemented	Projects Under Construction	Projects in Design	Projects No Longer Considered
CRWA	1	0	0	0
GBRA	0	0	3	1
ARWA	0	0	1	0
NBU	0	0	1	0
SAWS	1	0	0	1

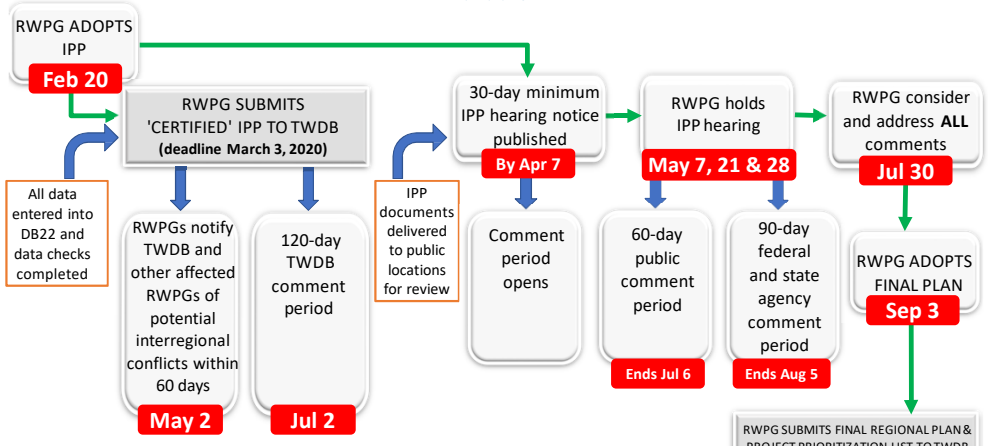
- Comparison of 2021 RWP to 2016 RWP:
  - Water demands
  - Source water availability
  - Drought of record
  - Existing Supplies
  - Needs
  - Water Management Strategies

Texas Water Development Board

2021 Regional Water Plans

Initially Prepared Plan (IPP) and Final Plan Process Schematic*

(may vary by Region)



* In accordance with 31 TAC §357.21 and §357.50

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updated October 2019

Direction Requested from SCTRWPG

- Adopt and submit the 2021 IPP and authorization for consultant to address any planning group changes to the IPP document prior to submitting to the TWDB
- Authorize Consultant to Submit 2021 IPP to the TWDB

Draft 2/11/2020

13. Discussion and Appropriate Action Authorizing the Consultant to Submit the 2021 Initially Prepared Plan on Behalf of the South Central Texas Regional Water Planning Group (SCTRWPG) by March 3, 2020

14. Discussion and Appropriate Action to Authorize the San Antonio River Authority to Post the Initially Prepared Plan Public Hearing Notice

FROM: South Central Texas Regional Water Planning Group (Region L)

DATE: February 20, 2020

SUBJECT: **Notice of 2021 Initially Prepared Plan (IPP) Submission to TWDB, Public Availability, Public Comment Period, and Public Hearings Schedule**

NOTICE TO PUBLIC: REGIONAL WATER PLANNING

Notice is hereby given that at its regional water planning group meeting on February 20, 2020, the South Central Texas Regional Water Planning Group (Region L) certified the completion of its 2021 Initially Prepared Plan (IPP), adopted the IPP, and authorized the San Antonio River Authority (SARA), Region L Administrator, to submit the IPP on or before March 3, 2020. In collaboration with the Region L technical consultants, Black and Veatch Engineering, the 2021 IPP was submitted to the Texas Water Development Board (TWDB) on March 3, 2020.

By issuance of this Notice to Public, a 30 day pre-public hearing comment period is currently active until the last IPP public hearing. The public comment period will continue for no less than 60 days thereafter. Written comments may be submitted anytime from the date of this notice until July 6, 2020, and must be submitted to SARA (details provided below). Written and verbal comments will be accepted at each of IPP public hearing.

The IPP public hearings will take place at the following locations and specified dates and times:

May 7, 2020 at 6:00 p.m.:
San Antonio Water System
Customer Service Building,
Room CR C145
2800 US Highway 281 North
San Antonio, Texas 78212

May 21, 2020 at 6:00 p.m.:
City of San Marcos
San Marcos Rec Hall
170 Charles Austin Dr.
San Marcos, TX 78666

May 28, 2020 at 6:00 p.m.:
City of Victoria
Dr. Pattie Dodson Health
Center, Room 108
2805 N. Navarro St.
Victoria, Texas 77901

The South Central Texas Regional Water Planning Group (Region L) includes the following counties: Atascosa, Bexar, Caldwell, Calhoun, Comal, Dewitt, Dimmit, Frio, Goliad, Gonzales, Guadalupe, Karnes, Kendall, La Salle, Medina, Refugio, Uvalde, Victoria, Wilson, Zavala and part of Hays Counties.

Copies of the IPP are available for viewing at SARA, the county clerks of each of the above counties, a public library within each of the above counties, online at www.regionltexas.org, and online at https://www.twdb.texas.gov/. Please find a list of all libraries and county clerk offices with copies of the IPP at www.regionltexas.org.

Written comments from the public regarding the IPP must be submitted to SARA by no later than 5:00 PM July 6, 2020. Comments can be submitted to SARA as follows:

Steven J. Raabe, Administrative Agent for Region L, San Antonio River Authority, P.O. Box 839980 San Antonio, Texas 78283-3692

For additional information, please contact Caitlin Heller, San Antonio River Authority, c/o Region L; 100 E Guenther St, San Antonio, Tx 89204 (210 302 3293), and cheller@sara-tx.org.

15. Discussion and Appropriate Action Setting the Schedule for Calendar Year 2020 Meetings

    a. July 30, 2020

16. Possible Agenda Items for the Next Region L Meeting (July 30, 2020)

a. Discussion and Appropriate Action Regarding Public Hearing Comments
b. Presentations of Chapters 9, 10, and 11 of the Regional Water Plan
c. Presentation of Project Prioritization

17. Public Comment