

AGENDA ITEM MEMO

BOARD MEETING DATE: January 19, 2021

TO: Board Members

THROUGH: Jeff Walker, Executive Administrator
Ashley Harden, General Counsel
Jessica Zuba, Deputy Executive Administrator, Water Supply & Infrastructure

FROM: Elizabeth McCoy, Planner, Regional Water Planning
Sarah Backhouse, Manager, Regional Water Planning

SUBJECT: Approval of the 2021 Region E Regional Water Plan

ACTION REQUESTED

Consider approval of the 2021 Regional Water Plan (RWP) for the Far West Texas (Region E) Regional Water Planning Group (RWPG).

BACKGROUND

In accordance with §16.051 of the Texas Water Code (TWC), the Texas Water Development Board (TWDB) is required to develop and adopt a comprehensive state water plan every five years that incorporates the RWPs developed and approved in accordance with TWC §16.053. RWPGs are required to submit their adopted RWPs to the TWDB for approval every five years pursuant to 31 Texas Administrative Code (TAC) §357.50.

In accordance with 31 TAC §357.50, the Board is required to consider approval of submitted RWPs and may approve a RWP only after it has determined that the RWP complies with statute and rules including TWC §16.053 and 31 TAC §355, §357, §358.

In accordance with TWC §16.053, the TWDB may approve a RWP only after it has determined that:

- all interregional conflicts involving the regional water planning area, if any, have been resolved;
- the plan includes water conservation practices and drought management measures; and
- the plan is consistent with long-term protection of the state's water resources, agricultural resources, and natural resources.

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Peter M. Lake, Chairman | Kathleen Jackson, Board Member | Brooke T. Paup, Board Member
Jeff Walker, Executive Administrator

The Executive Administrator (EA) has conducted a review of the final adopted Region E 2021 RWP related to all applicable legal and contractual requirements, including the following key issues:

1. Determinations of whether the plans were developed according to the general provisions for planning included in statute, rule, and guidance.
2. Determination that there are no interregional conflicts associated with the plan.
3. Determination that environmental planning criteria, including consideration of environmental flow standards adopted by the Texas Commission on Environmental Quality, related to instream and bay and estuary inflows were followed appropriately in evaluations of water management strategies utilizing surface water.
4. Determination that existing and recommended water supplies could reasonably be expected to be available under a repeat of the historic drought of record.
5. Determination that impacts to agricultural resources and environmental factors were quantified.
6. Determination that cost estimates developed in the plan were prepared in general accordance with the provisions of the contract.
7. Determination that water conservation and drought management was considered as a means to meet all identified water needs.
8. Determination that all comments received by the regional water planning groups on the initially prepared plans from the TWDB have been satisfactorily addressed.
9. Determination that, in aggregate, the plan was found to meet the requirements related to:
 - a. consideration of a balance of economic, social, and ecological viability as well as consideration of the interests of the state and entities providing water.
 - b. providing for the orderly development, management, and conservation of water resources and preparation for and response to drought conditions in order that sufficient water will be available at a reasonable cost to ensure public health, safety, and welfare, and further economic development.
10. Determination that the plan is consistent with long-term protection of the state and regional water resources, agricultural resources, and natural resources.

Summary data of the projected population, existing supplies, demands, needs, and strategy supplies, as well as a summary of recommended water management strategies and projects are included as an attachment.

KEY ISSUES

1. The total recommended water management strategy volume is approximately 82,000 acre-feet per year in 2020 and 156,000 acre-feet per year in 2070.
2. The recommended water management strategies in the 2021 Region E RWP meet all identified needs in the plan except for approximately 13,000 acre-feet per year associated with irrigation and mining uses in 2020 increasing to approximately

16,000 acre-feet per year associated with irrigation and mining uses in 2070. These needs were left unmet by the planning group due to limited, economically feasible water supply options.

3. The total capital cost of the 39 recommended projects in the 2021 Region E RWP is approximately \$1.5 billion.
4. Conservation accounts for 33.6 percent of 2070 strategy volumes.
5. Groundwater desalination accounts for 19.7 percent of 2070 volumes and aquifer storage and recovery accounts for 3.6 percent of 2070 strategy volumes. Groundwater development accounts for an additional 27.7 percent of 2070 strategy volumes.
6. The Region E RWPG formally adopted their final 2021 RWP on October 28, 2020.
7. The EA has reviewed the adopted 2021 Region E RWP and determined that the plan complies with statute and rules.
8. The EA has reviewed the 2021 Region E RWP for interregional conflicts and has found none.

RECOMMENDATION

The EA recommends approval of the 2021 Region E RWP.

Attachment: Data Summary of the 2021 Region E RWP

Region E 2021 Regional Water Plan Data Summary

Table 1 - Population, existing water supplies, demands, needs, and strategies 2020–2070 (acre-feet per year)*

	Decade	2020	2030	2040	2050	2060	2070
	Population	954,000	1,086,000	1,208,000	1,329,000	1,444,000	1,551,000
Existing supplies	Surface water	50,000	50,000	50,000	50,000	50,000	50,000
	Groundwater	390,000	390,000	384,000	384,000	384,000	384,000
	Reuse	41,000	41,000	41,000	41,000	41,000	41,000
	Total water supplies	481,000	481,000	475,000	475,000	475,000	475,000
Demands	Municipal Utility	139,000	153,000	167,000	182,000	197,000	211,000
	Municipal County-other	3,000	4,000	5,000	6,000	6,000	7,000
	Manufacturing	7,000	8,000	8,000	8,000	8,000	8,000
	Mining	8,000	9,000	10,000	10,000	10,000	11,000
	Irrigation	310,000	310,000	310,000	310,000	310,000	310,000
	Steam-electric	11,000	11,000	11,000	11,000	11,000	11,000
	Livestock	2,000	2,000	2,000	2,000	2,000	2,000
	Total water demand	480,000	498,000	513,000	528,000	544,000	560,000
Needs	Municipal Utility	4,000	8,000	12,000	25,000	39,000	52,000
	Municipal County-other	<500	<500	<500	<500	<500	<500
	Manufacturing	0	1,000	1,000	1,000	1,000	1,000
	Mining	3,000	3,000	4,000	4,000	5,000	6,000
	Irrigation	47,000	47,000	52,000	52,000	52,000	52,000
	Steam-electric	7,000	7,000	7,000	7,000	7,000	7,000
	Total water needs	61,000	66,000	76,000	89,000	104,000	119,000
Strategy supplies	Municipal Utility	37,000	68,000	79,000	96,000	100,000	106,000
	Municipal County-other	<500	<500	<500	<500	<500	<500
	Manufacturing	0	1,000	1,000	1,000	1,000	1,000
	Mining	4,000	4,000	4,000	4,000	4,000	4,000
	Irrigation	34,000	37,000	37,000	37,000	37,000	37,000
	Steam-electric	7,000	7,000	7,000	7,000	7,000	7,000
	Total strategy supplies	82,000	118,000	130,000	146,000	150,000	156,000

* Total values in this table are presented as rounded actual total values rather than the sum of rounded values to provide consistent referencing of total values.

Table 2 - Ten recommended water management strategies with largest supply volume

Recommended water management strategy name	2070 projected population served by strategy	Number of water user groups served	Strategy volume in acre-feet per year in 2070
EPCWID #1 - Improvements to Water District Delivery System	na	1	25,000
EPW - Municipal Conservation Program	1,136,000	1	18,000
Horizon Regional MUD - Additional Wells and Expansion of Desalination Plant	152,000	1	17,000
EPW - Advanced Water Purification at the Bustamante WWTP	1,136,000	1	11,000
EPW - Groundwater from Dell City Area (Phase 1)	1,136,000	1	10,000
EPW - Groundwater from Dell City Area (Phase 2)	1,136,000	1	10,000
El Paso County (SEP) - Purchase Water from EPW	na	1	7,000
LVWD - Groundwater from Proposed Well Field - Hueco Bolson Aquifer	101,000	1	7,000
LVWD - Groundwater from Proposed Well Field - Rio Grande Alluvium Aquifer	101,000	1	7,000
LVWD - Purchase Water from EPW	101,000	1	6,000
<i>Other recommended strategies</i>	<i>na</i>	<i>38</i>	<i>39,000</i>

Table 3 - Ten recommended water management strategy projects with largest capital cost

Recommended water management strategy project	Online decade	Sponsor(s)	Capital Cost
EPW - Groundwater from Dell City Area (Phase 1)	2040	El Paso Water	\$569,357,000
EPW - Groundwater from Dell City Area (Phase 2)	2050	El Paso Water	\$320,226,000
El Paso County - EPCWID #1 - Improvements to Water District Delivery System	2020	Irrigation (El Paso)	\$157,777,783
EPW - Advanced Purified Water at the Bustamante WWTP	2020	El Paso Water	\$100,361,400
LVWD - Surface Water Treatment Plant and Transmission Lines	2030	Lower Valley Water District	\$74,338,000
Horizon Regional MUD - Additional Wells and Expansion of Desal Plant	2020	Horizon Regional MUD	\$71,809,000
LVWD- Groundwater from Proposed Well Field - Rio Grande Alluvium Aquifer	2030	Lower Valley Water District	\$39,236,000
EPW - Hueco Bolson Artificial Recharge	2030	El Paso Water	\$38,003,000
LVWD - Groundwater from Proposed Well Field - Hueco Bolson Aquifer	2030	Lower Valley Water District	\$36,110,000
LVWD - Wastewater Treatment and ASR Facility	2030	Lower Valley Water District	\$23,509,000
<i>Other recommended projects</i>	<i>various</i>	<i>29 various</i>	<i>\$73,624,886</i>
Total capital cost			\$1,504,352,069

Table 4 - Unmet water needs by water user group type 2020-2070 (acre-feet per year)

Water User Group Category	2020	2030	2040	2050	2060	2070
Irrigation	12,941	9,691	15,109	15,109	15,109	15,109
Livestock	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0
Mining	483	586	550	416	578	1,326
Municipal County-Other	0	0	0	0	0	0
Municipal Utility	0	0	0	0	0	0
Steam Electric Power	0	0	0	0	0	0
Total unmet needs	13,424	10,277	15,659	15,525	15,687	16,435

AGENDA ITEM MEMO

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TO: Board Members

THROUGH: Jeff Walker, Executive Administrator
Ashley Harden, General Counsel
Jessica Zuba, Deputy Executive Administrator, Water Supply & Infrastructure

FROM: Elizabeth McCoy, Planner, Regional Water Planning
Sarah Backhouse, Manager, Regional Water Planning

SUBJECT: Approval of the 2021 Region F Regional Water Plan

ACTION REQUESTED

Consider approval of the 2021 Regional Water Plan (RWP) for the Region F Regional Water Planning Group (RWPG).

BACKGROUND

In accordance with §16.051 of the Texas Water Code (TWC), the Texas Water Development Board (TWDB) is required to develop and adopt a comprehensive state water plan every five years that incorporates the RWPs developed and approved in accordance with TWC §16.053. RWPGs are required to submit their adopted RWPs to the TWDB for approval every five years pursuant to 31 Texas Administrative Code (TAC) §357.50.

In accordance with 31 TAC §357.50, the Board is required to consider approval of submitted RWPs and may approve a RWP only after it has determined that the RWP complies with statute and rules including TWC §16.053 and 31 TAC §355, §357, §358.

In accordance with TWC §16.053, the TWDB may approve a RWP only after it has determined that:

- all interregional conflicts involving the regional water planning area, if any, have been resolved;
- the plan includes water conservation practices and drought management measures; and
- the plan is consistent with long-term protection of the state's water resources, agricultural resources, and natural resources.

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Board Members

Peter M. Lake, Chairman | Kathleen Jackson, Board Member | Brooke T. Paup, Board Member

Jeff Walker, Executive Administrator

The Executive Administrator (EA) has conducted a review of the final adopted Region F 2021 RWP related to all applicable legal and contractual requirements, including the following key issues:

1. Determinations of whether the plans were developed according to the general provisions for planning included in statute, rule, and guidance.
2. Determination that there are no interregional conflicts associated with the plan.
3. Determination that environmental planning criteria, including consideration of environmental flow standards adopted by the Texas Commission on Environmental Quality, related to instream and bay and estuary inflows were followed appropriately in evaluations of water management strategies utilizing surface water.
4. Determination that existing and recommended water supplies could reasonably be expected to be available under a repeat of the historic drought of record.
5. Determination that impacts to agricultural resources and environmental factors were quantified.
6. Determination that cost estimates developed in the plan were prepared in general accordance with the provisions of the contract.
7. Determination that water conservation and drought management was considered as a means to meet all identified water needs.
8. Determination that all comments received by the regional water planning groups on the initially prepared plans from the TWDB have been satisfactorily addressed.
9. Determination that, in aggregate, the plan was found to meet the requirements related to:
 - a. consideration of a balance of economic, social, and ecological viability as well as consideration of the interests of the state and entities providing water.
 - b. providing for the orderly development, management, and conservation of water resources and preparation for and response to drought conditions in order that sufficient water will be available at a reasonable cost to ensure public health, safety, and welfare, and further economic development.
10. Determination that the plan is consistent with long-term protection of the state and regional water resources, agricultural resources, and natural resources.

Summary data of the projected population, existing supplies, demands, needs, and strategy supplies, as well as a summary of recommended water management strategies and projects are included as an attachment.

KEY ISSUES

1. The total recommended water management strategy volume is approximately 79,000 acre-feet per year in 2020 and 182,000 acre-feet per year in 2070.
2. The recommended water management strategies in the 2021 Region F RWP meets all identified needs in the plan except for approximately 28,000 acre-feet per year associated with irrigation, livestock, manufacturing, mining, municipal, and steam

electric power uses in 2020 increasing to approximately 40,000 acre-feet per year associated with irrigation, livestock, manufacturing, mining, municipal, and steam-electric power uses in 2070. These needs were left unmet by the planning group due to modeled available groundwater (MAG) limitations and limited, economically feasible water supply options. The RWPG considers the identified steam-electric power needs as not likely to arise due to plants having closed down since projections were developed. To address the unmet municipal needs, the plan states that users are planning to pursue allowable development of groundwater above the MAG volume by coordinating with groundwater conservation districts where applicable. Therefore, public health, safety, and welfare is anticipated to be protected. Conservation has also been recommended for these users.

3. The total capital cost of the 111 recommended projects in the 2021 Region F RWP is approximately \$1.6 billion.
4. Conservation accounts for 36.2 percent of 2070 strategy volumes, with 33 percent associated with irrigation conservation.
5. Groundwater development accounts for 28.1 percent of 2070 strategy volumes and groundwater desalination accounts for 10.8 percent of 2070 strategy volumes.
6. The Region F RWPG formally adopted their final 2021 RWP on September 17, 2020.
7. The EA has reviewed the adopted 2021 Region F RWP and determined that the plan complies with statute and rules.
8. The EA has reviewed the 2021 Region F RWP for interregional conflicts and has found none.

RECOMMENDATION

The EA recommends approval of the 2021 Region F RWP.

Attachment: Data Summary of the 2021 Region F RWP

Region F 2021 Regional Water Plan Data Summary

Table 1 - Population, existing water supplies, demands, needs, and strategies 2020–2070 (acre-feet per year)*

	Decade	2020	2030	2040	2050	2060	2070
	Population	716,000	798,000	859,000	919,000	978,000	1,040,000
Existing supplies	Surface water	99,000	98,000	97,000	96,000	96,000	95,000
	Groundwater	606,000	596,000	585,000	568,000	554,000	547,000
	Reuse	24,000	24,000	24,000	24,000	24,000	24,000
	Total water supplies	729,000	718,000	707,000	689,000	674,000	666,000
Demands	Municipal Utility	125,000	137,000	145,000	154,000	163,000	173,000
	Municipal County-other	13,000	13,000	14,000	15,000	16,000	17,000
	Manufacturing	12,000	13,000	13,000	13,000	13,000	13,000
	Mining	109,000	110,000	91,000	67,000	46,000	34,000
	Irrigation	477,000	477,000	477,000	477,000	477,000	477,000
	Steam-electric	18,000	18,000	18,000	18,000	18,000	18,000
	Livestock	12,000	12,000	12,000	12,000	12,000	12,000
	Total water demand	765,000	780,000	770,000	755,000	745,000	744,000
Needs	Municipal Utility	14,000	18,000	23,000	33,000	43,000	55,000
	Municipal County-other	<500	1,000	1,000	1,000	1,000	1,000
	Manufacturing	1,000	1,000	1,000	1,000	2,000	2,000
	Mining	21,000	21,000	18,000	12,000	8,000	5,000
	Irrigation	14,000	18,000	20,000	21,000	25,000	27,000
	Steam-electric	13,000	13,000	13,000	13,000	13,000	13,000
	Livestock	<500	<500	<500	<500	<500	<500
	Total water needs	63,000	72,000	75,000	81,000	91,000	103,000
Strategy supplies	Municipal Utility	27,000	65,000	73,000	78,000	83,000	89,000
	Municipal County-other	1,000	5,000	6,000	6,000	6,000	6,000
	Manufacturing	1,000	2,000	2,000	2,000	2,000	3,000
	Mining	19,000	19,000	18,000	17,000	16,000	15,000
	Irrigation	29,000	49,000	66,000	66,000	67,000	67,000
	Steam-electric	2,000	2,000	2,000	2,000	2,000	2,000
	Total strategy supplies	79,000	141,000	166,000	171,000	176,000	182,000

* Total values in this table are presented as rounded actual total values rather than the sum of rounded values to provide consistent referencing of total values.

Table 2 - Ten recommended water management strategies with largest supply volume

Recommended water management strategy name	2070 projected population served by strategy	Number of water user groups served	Strategy volume in acre-feet per year in 2070
West Texas Water Partnership	377,000	4	29,000
Irrigation Conservation - Pecos County	na	1	22,000
Subordination - CRMWD System	578,000	16	21,000
Develop Additional Pecos Valley Aquifer Supplies - Reeves County Mining	na	1	10,000
Partner with Madera Valley WSC & Expand Well Field - Pecos City	11,000	1	9,000
Irrigation Conservation - Reeves County	na	1	9,000
Concho River Water Project - San Angelo	170,000	7	8,000
Advanced Treatment (RO) of Paul Davis Well Field Supplies - Midland	224,000	1	6,000
Irrigation Conservation - Martin County	na	1	5,000
Weather Modification	na	10	5,000
<i>Other recommended strategies</i>	<i>na</i>	<i>188</i>	<i>57,000</i>

Table 3 - Ten recommended water management strategy projects with largest capital cost

Recommended water management strategy project	Online decade	Sponsor(s)	Capital Cost
West Texas Water Partnership	2030	San Angelo; Abilene; Midland	\$549,093,000
CRMWD - Ward County Well Field Expansion and Development of Winkler County Well Field	2050	Colorado River MWD	\$168,324,000
Concho River Water Project - San Angelo	2020	San Angelo	\$116,861,000
New Water Treatment Plant - Big Spring	2030	Big Spring	\$104,651,000
RO Treatment of Existing Supplies - Odessa	2030	Odessa	\$83,062,000
Advanced Treatment (RO) of Paul Davis Well Field Supplies - Midland	2040	Midland	\$60,804,000
Hickory Well Field Expansion in Mcculloch County - San Angelo	2030	San Angelo	\$55,491,000
Partner with Madera Valley WSC & Expand Well Field - Pecos City	2030	Pecos	\$43,107,000
Advanced Groundwater Treatment - Brady	2020	Brady	\$29,719,000
Direct Potable Reuse - Pecos City	2030	Pecos	\$29,541,000
<i>Other recommended projects</i>	<i>various</i>	<i>101 various</i>	<i>\$394,402,896</i>
Total capital cost			\$1,635,055,896

Table 4 - Unmet water needs by water user group type 2020-2070 (acre-feet per year)

Water User Group Category	2020	2030	2040	2050	2060	2070
Irrigation	10,686	13,151	16,733	18,660	22,157	24,739
Livestock	9	17	25	39	50	60
Manufacturing	31	59	87	134	174	209
Mining	5,956	6,052	3,219	1,717	895	894
Municipal County-Other	16	43	74	134	192	254
Municipal Utility	147	476	745	1,323	2,000	2,814
Steam Electric Power	11,008	11,022	11,036	11,050	11,064	11,078
Total unmet needs	27,853	30,820	31,919	33,057	36,532	40,048

AGENDA ITEM MEMO

BOARD MEETING DATE: January 19, 2021

TO: Board Members

THROUGH: Jeff Walker, Executive Administrator
Ashley Harden, General Counsel
Jessica Zuba, Deputy Executive Administrator, Water Supply & Infrastructure

FROM: Elizabeth McCoy, Planner, Regional Water Planning
Sarah Backhouse, Manager, Regional Water Planning

SUBJECT: Approval of the 2021 Region L Regional Water Plan

ACTION REQUESTED

Consider approval of the 2021 Regional Water Plan (RWP) for the South Central Texas (Region L) Regional Water Planning Group (RWPG).

BACKGROUND

In accordance with §16.051 of the Texas Water Code (TWC), the Texas Water Development Board (TWDB) is required to develop and adopt a comprehensive state water plan every five years that incorporates the RWPs developed and approved in accordance with TWC §16.053. RWPGs are required to submit their adopted RWPs to the TWDB for approval every five years pursuant to 31 Texas Administrative Code (TAC) §357.50.

In accordance with 31 TAC §357.50, the Board is required to consider approval of submitted RWPs and may approve a RWP only after it has determined that the RWP complies with statute and rules including TWC §16.053 and 31 TAC §355, §357, §358.

In accordance with TWC §16.053, the TWDB may approve a RWP only after it has determined that:

- all interregional conflicts involving the regional water planning area, if any, have been resolved;
- the plan includes water conservation practices and drought management measures; and
- the plan is consistent with long-term protection of the state's water resources, agricultural resources, and natural resources.

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[Board Members](#)

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Jeff Walker, Executive Administrator

The Executive Administrator (EA) has conducted a review of the final adopted Region L 2021 RWP related to all applicable legal and contractual requirements, including the following key issues:

1. Determinations of whether the plans were developed according to the general provisions for planning included in statute, rule, and guidance.
2. Determination that there are no interregional conflicts associated with the plan.
3. Determination that environmental planning criteria, including consideration of environmental flow standards adopted by the Texas Commission on Environmental Quality, related to instream and bay and estuary inflows were followed appropriately in evaluations of water management strategies utilizing surface water.
4. Determination that existing and recommended water supplies could reasonably be expected to be available under a repeat of the historic drought of record.
5. Determination that impacts to agricultural resources and environmental factors were quantified.
6. Determination that cost estimates developed in the plan were prepared in general accordance with the provisions of the contract.
7. Determination that water conservation and drought management was considered as a means to meet all identified water needs.
8. Determination that all comments received by the RWPGs on the initially prepared plans from the TWDB have been satisfactorily addressed.
9. Determination that, in aggregate, the plan was found to meet the requirements related to:
 - a. consideration of a balance of economic, social, and ecological viability as well as consideration of the interests of the state and entities providing water.
 - b. providing for the orderly development, management, and conservation of water resources and preparation for and response to drought conditions in order that sufficient water will be available at a reasonable cost to ensure public health, safety, and welfare, and further economic development.
10. Determination that the plan is consistent with long-term protection of the state and regional water resources, agricultural resources, and natural resources.

Summary data of the projected population, existing supplies, demands, needs, and strategy supplies, as well as a summary of recommended water management strategies and projects are included as an attachment.

KEY ISSUES

1. The total recommended water management strategy volume is approximately 199,000 acre-feet per year in 2020 and 737,000 acre-feet per year in 2070.
2. The recommended water management strategies in the 2021 Region L RWP meets all identified needs in the plan except for approximately 174,000 acre-feet per year associated with irrigation, manufacturing, mining, and steam-electric power uses in

2020 decreasing to approximately 155,000 acre-feet per year associated with irrigation and mining uses in 2070. These needs were left unmet by the planning group due to limited, economically feasible water supply options.

3. The total capital cost of the 57 recommended projects in the 2021 Region L RWP is approximately \$4 billion.
4. Conservation accounts for 22.7 percent of 2070 strategy volumes.
5. Groundwater development accounts for 22.8 percent of 2070 strategy volumes; new major reservoirs account for 13.6 percent of 2070 strategy volumes; and aquifer storage and recovery accounts for 10.2 percent of 2070 strategy volumes.
6. The Region L RWPG formally adopted their final 2021 RWP on September 3, 2020.
7. The EA has reviewed the adopted 2021 Region L RWP and determined that the plan complies with statute and rules.
8. The EA has reviewed the 2021 Region L RWP for interregional conflicts and has found none.

RECOMMENDATION

The EA recommends approval of the 2021 Region L RWP.

Attachment: Data Summary of the 2021 Region L RWP

Region L 2021 Regional Water Plan Data Summary

Table 1 - Population, existing water supplies, demands, needs, and strategies 2020–2070 (acre-feet per year)*

	Decade	2020	2030	2040	2050	2060	2070
	Population	3,013,000	3,491,000	3,937,000	4,357,000	4,795,000	5,219,000
Existing supplies	Surface water	256,000	253,000	250,000	251,000	253,000	254,000
	Groundwater	717,000	719,000	721,000	722,000	722,000	722,000
	Reuse	29,000	34,000	39,000	39,000	39,000	39,000
	Total water supplies	1,002,000	1,005,000	1,009,000	1,011,000	1,014,000	1,014,000
Demands	Municipal Utility	415,000	468,000	518,000	568,000	619,000	668,000
	Municipal County-other	18,000	18,000	19,000	20,000	26,000	32,000
	Manufacturing	73,000	83,000	83,000	83,000	83,000	83,000
	Mining	49,000	50,000	49,000	45,000	41,000	41,000
	Irrigation	359,000	359,000	359,000	358,000	358,000	358,000
	Steam-electric	106,000	106,000	106,000	106,000	106,000	106,000
	Livestock	32,000	32,000	32,000	32,000	32,000	32,000
	Total water demand	1,051,000	1,115,000	1,164,000	1,211,000	1,264,000	1,320,000
Needs	Municipal Utility	24,000	48,000	83,000	121,000	164,000	208,000
	Municipal County-other	1,000	1,000	1,000	1,000	3,000	9,000
	Manufacturing	10,000	13,000	13,000	13,000	13,000	13,000
	Mining	16,000	17,000	15,000	12,000	10,000	9,000
	Irrigation	131,000	132,000	134,000	136,000	138,000	141,000
	Steam-electric	22,000	22,000	22,000	22,000	22,000	22,000
	Total water needs	204,000	232,000	268,000	305,000	350,000	401,000
Strategy supplies	Municipal Utility	186,000	322,000	442,000	487,000	578,000	618,000
	Municipal County-other	1,000	1,000	1,000	1,000	4,000	10,000
	Manufacturing	3,000	21,000	21,000	21,000	21,000	21,000
	Mining	6,000	8,000	9,000	10,000	11,000	11,000
	Steam-electric	3,000	77,000	77,000	77,000	77,000	77,000
	Total strategy supplies	199,000	429,000	551,000	596,000	692,000	737,000

* Total values in this table are presented as rounded actual total values rather than the sum of rounded values to provide consistent referencing of total values.

Table 2 - Ten recommended water management strategies with largest supply volume

Recommended water management strategy name	2070 projected population served by strategy	Number of water user groups served	Strategy volume in acre-feet per year in 2070
Municipal Water Conservation	4,763,000	106	167,000
SAWS Expanded Brackish Groundwater Project	2,880,000	1	70,000
GBRA Lower Basin Storage Project	33,000	2	60,000
Drought Management - SAWS	2,880,000	1	57,000
FE-CPS Direct Recycle Pipeline	na	1	50,000
GBRA Lower Basin New Appropriation	na	2	41,000
Reuse-SAWS-Reuse Water Programs	2,880,000	1	40,000
FE-SAWS ASR Treatment Plant Expansion	2,880,000	1	34,000
ARWA/GBRA Project (Phase 1)	758,000	9	29,000
Local Groundwater Development	173,000	22	28,000
<i>Other recommended strategies</i>	<i>na</i>	<i>113</i>	<i>162,000</i>

Table 3 - Ten recommended water management strategy projects with largest capital cost

Recommended water management strategy project	Online decade	Sponsor(s)	Capital Cost
SAWS - Expanded Brackish Wilcox Project	2040	San Antonio Water System	\$819,805,000
GBRA MBWSP	2030	Guadalupe-Blanco River Authority	\$403,046,000
GBRA New Appropriation (Lower Basin)	2030	Guadalupe-Blanco River Authority	\$381,960,000
ARWA/GBRA Shared Facilities Project	2020	Guadalupe-Blanco River Authority; Alliance Regional Water Authority	\$352,877,000
SAWS Advanced Meter Infrastructure	2020	San Antonio Water System	\$208,060,000
Recycled Water Program - SAWS	2030	San Antonio Water System	\$196,963,028
CRWA - Brackish Wilcox Groundwater	2030	Canyon Regional Water Authority	\$177,944,000
ARWA Phase 2	2040	Alliance Regional Water Authority	\$130,526,000
Cibolo Valley LCG Carrizo Project	2030	Cibolo Valley Local Government Corporation	\$130,277,000
GBRA Victoria County Steam Electric Project	2030	Guadalupe-Blanco River Authority	\$117,260,000
<i>Other recommended projects</i>	<i>various</i>	<i>47 various</i>	<i>\$1,096,683,161</i>
Total capital cost			\$4,015,401,189

Table 4 - Unmet water needs by water user group type 2020–2070 (acre-feet per year)

Water User Group Category	2020	2030	2040	2050	2060	2070
Irrigation	136,838	138,055	140,052	142,220	151,264	154,615
Livestock	0	0	0	0	0	0
Manufacturing	7,641	0	0	0	0	0
Mining	10,332	10,003	8,227	4,613	1,503	229
Municipal County-Other	0	0	0	0	0	0
Municipal Utility	0	0	0	0	0	0
Steam Electric Power	18,925	0	0	0	0	0
Total unmet needs	173,736	148,058	148,279	146,833	152,767	154,844