

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: William Alfaro, Planner, Regional Water Planning
Sarah Backhouse, Manager, Regional Water Planning

SUBJECT: Approval of the 2021 Region A Regional Water Plan

ACTION REQUESTED

Consider approval of the 2021 Regional Water Plan (RWP) for the Panhandle (Region A) 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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Jeff Walker, Executive Administrator

The Executive Administrator (EA) has conducted a review of the final adopted Region A 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 155,000 acre-feet per year in 2020 and 658,000 acre-feet per year in 2070.
2. The recommended water management strategies in the 2021 Region A RWP meets all identified needs in the plan except for approximately 81,000 acre-feet per year associated with irrigation use in 2020 decreasing to approximately 42,000 acre-feet

per year 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 65 recommended projects in the 2021 Region A RWP is approximately \$1.1 billion.
4. Conservation accounts for 87.2 percent of 2070 strategy volumes, with irrigation conservation accounting for 85.9 percent.
5. Groundwater development accounts for 11.5 percent of 2070 strategy volumes and aquifer storage and recovery accounts for 1.1 percent of 2070 strategy volumes.
6. The Region A RWPG formally adopted their final 2021 RWP on September 25, 2020.
7. The EA has reviewed the adopted 2021 Region A RWP and determined that the plan complies with statute and rules.
8. The EA has reviewed the 2021 Region A RWP for interregional conflicts and has found none.

RECOMMENDATION

The EA recommends approval of the 2021 Region A RWP.

Attachment: Data Summary of the 2021 Region A RWP

Region A 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	418,000	460,000	503,000	546,000	591,000	637,000
Existing supplies	Surface water	34,000	34,000	34,000	34,000	33,000	33,000
	Groundwater	1,941,000	1,696,000	1,535,000	1,344,000	1,166,000	1,169,000
	Reuse	25,000	25,000	25,000	25,000	25,000	25,000
	Total water supplies	2,000,000	1,756,000	1,594,000	1,403,000	1,225,000	1,227,000
Demands	Municipal Utility	83,000	89,000	96,000	104,000	112,000	121,000
	Municipal County-other	9,000	10,000	11,000	12,000	12,000	13,000
	Manufacturing	49,000	53,000	53,000	53,000	53,000	53,000
	Mining	11,000	10,000	7,000	4,000	3,000	3,000
	Irrigation	1,919,000	1,914,000	1,764,000	1,549,000	1,336,000	1,336,000
	Steam-electric	19,000	19,000	19,000	19,000	19,000	19,000
	Livestock	40,000	43,000	46,000	48,000	51,000	54,000
	Total water demand	2,131,000	2,138,000	1,995,000	1,789,000	1,586,000	1,598,000
Needs	Municipal Utility	1,000	10,000	22,000	36,000	49,000	58,000
	Municipal County-other	0	<500	<500	<500	<500	<500
	Manufacturing	1,000	3,000	4,000	7,000	9,000	10,000
	Irrigation	146,000	382,000	385,000	352,000	310,000	311,000
	Total water needs	148,000	394,000	411,000	394,000	369,000	378,000
Strategy supplies	Municipal Utility	13,000	46,000	51,000	66,000	71,000	83,000
	Municipal County-other	<500	<500	<500	<500	<500	<500
	Manufacturing	1,000	3,000	4,000	8,000	9,000	10,000
	Irrigation	141,000	247,000	475,000	541,000	537,000	565,000
	Total strategy supplies	155,000	295,000	529,000	616,000	618,000	658,000

* 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
Irrigation Conservation - Sherman County	na	1	111,000
Irrigation Conservation - Hartley County	na	1	99,000
Irrigation Conservation - Dallam County	na	1	84,000
Irrigation Conservation - Hansford County	na	1	65,000
Irrigation Conservation - Moore County	na	1	61,000
Irrigation Conservation - Carson County	na	1	32,000
Irrigation Conservation - Ochiltree County	na	1	32,000
Develop Potter/Carson County Well Field (Ogallala Aquifer) - Amarillo	354,000	1	20,000
Irrigation Conservation - Hutchinson County	na	1	20,000
Develop Roberts County Well Field (Ogallala Aquifer) - Amarillo	354,000	1	11,000
<i>Other recommended strategies</i>	<i>na</i>	<i>104</i>	<i>123,000</i>

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

Recommended water management strategy project	Online decade	Sponsor(s)	Capital Cost
CRMWA II Shared Pipeline	2030	Canadian River Municipal Water Authority	\$301,355,000
Water Audit and Leak Repair - Amarillo	2020	Amarillo	\$170,849,900
CRMWA II CRMWA Pipeline	2030	Canadian River Municipal Water Authority	\$100,489,000
Amarillo Wellfield to CRMWA II Transmission Pipeline - Amarillo	2070	Amarillo	\$92,956,000
Expansion of Roberts County Well Field (Ogallala Aquifer) in 2024 - CRMWA2	2030	Canadian River Municipal Water Authority	\$66,679,000
Direct Potable Reuse - Amarillo	2040	Amarillo	\$51,270,000
Advanced Metering Infrastructure - Amarillo	2020	Amarillo	\$31,000,000
Replace Capacity of Roberts County Well Field (Ogallala Aquifer) in 2040 - CRMWA	2040	Canadian River Municipal Water Authority	\$30,900,000
Develop Potter/Carson County Well Field Phase I (Ogallala Aquifer) - Amarillo	2030	Amarillo	\$29,600,000
Develop Potter/Carson County Well Field Phase II (Ogallala Aquifer) - Amarillo	2050	Amarillo	\$29,600,000
<i>Other recommended projects</i>	<i>various</i>	<i>55 various</i>	<i>\$242,943,986</i>
Total capital cost			\$1,147,642,886

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	81,419	259,712	123,363	65,504	48,048	42,031
Livestock	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0
Mining	0	0	0	0	0	0
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	81,419	259,712	123,363	65,504	48,048	42,031

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: William Alfaro, Planner, Regional Water Planning
Sarah Backhouse, Manager, Regional Water Planning

SUBJECT: Approval of the 2021 Region J Regional Water Plan

ACTION REQUESTED

Consider approval of the 2021 Regional Water Plan (RWP) for the Plateau (Region J) 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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Jeff Walker, Executive Administrator

The Executive Administrator (EA) has conducted a review of the final adopted Region J 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 13,000 acre-feet per year in 2020 and 26,000 acre-feet per year in 2070.
2. The recommended water management strategies in the 2021 Region J RWP meets all identified needs in the plan except for approximately 500 acre-feet per year associated with municipal county-other and livestock uses in 2020 increasing to approximately 900 acre-feet per year associated with municipal county-other and

livestock uses in 2070. These needs were generally left unmet by the planning group due to modeled available groundwater limitations. To address the unmet municipal needs, the plan states that additional groundwater development strategies will be generated in Bandera County however the water users will need to coordinate with the groundwater conservation district. The plan states that in Val Verde County, the Del Rio Utilities Commission is likely to expand its service area to incorporate the county-other communities with needs in 2070. Conservation has also been recommended for these users and therefore public health, safety, and welfare is anticipated to be protected.

3. The total capital cost of the 45 recommended projects in the 2021 Region J RWP is approximately \$220 million.
4. Conservation accounts for 1.4 percent of 2070 strategy volumes.
5. Groundwater development accounts for 42.8 percent of 2070 strategy volumes; groundwater desalination accounts for 3.1 percent of 2070 strategy volumes; and aquifer storage & recovery accounts for 22.7 percent of 2070 strategy volumes.
6. The Region J RWPG formally adopted their final 2021 RWP on October 22, 2020.
7. The EA has reviewed the adopted 2021 Region J RWP and determined that the plan complies with statute and rules.
8. The EA has reviewed the 2021 Region J RWP for interregional conflicts and has found none.

RECOMMENDATION

The EA recommends approval of the 2021 Region J RWP.

Attachment: Data Summary of the 2021 Region J RWP

Region J 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	141,000	154,000	163,000	171,000	178,000	185,000
Existing supplies	Surface water	21,000	21,000	21,000	21,000	21,000	21,000
	Groundwater	38,000	38,000	38,000	38,000	38,000	38,000
	Reuse	2,000	2,000	2,000	2,000	2,000	2,000
	Aquifer storage & recovery	<500	<500	<500	<500	<500	<500
	Total water supplies	62,000	62,000	62,000	62,000	62,000	62,000
Demands	Municipal Utility	19,000	20,000	21,000	21,000	22,000	23,000
	Municipal County-other	7,000	7,000	8,000	8,000	9,000	9,000
	Manufacturing	<500	<500	<500	<500	<500	<500
	Mining	<500	<500	<500	<500	<500	<500
	Irrigation	9,000	9,000	9,000	9,000	9,000	9,000
	Livestock	2,000	2,000	2,000	2,000	2,000	2,000
	Total water demand	37,000	39,000	40,000	41,000	42,000	43,000
Needs	Municipal Utility	5,000	5,000	6,000	7,000	7,000	8,000
	Municipal County-other	<500	<500	<500	<500	<500	1,000
	Mining	<500	<500	<500	<500	<500	<500
	Irrigation	<500	<500	<500	<500	<500	<500
	Livestock	<500	<500	<500	<500	<500	<500
	Total water needs	6,000	6,000	7,000	8,000	8,000	9,000
Strategy supplies	Municipal Utility	12,000	22,000	22,000	22,000	22,000	22,000
	Municipal County-other	1,000	4,000	4,000	4,000	4,000	4,000
	Mining	<500	<500	<500	<500	<500	<500
	Irrigation	<500	<500	<500	<500	<500	<500
	Livestock	<500	<500	<500	<500	<500	<500
	Total strategy supplies	13,000	26,000	26,000	26,000	26,000	26,000

* 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
City of Del Rio - Drill and Equip a New Well and Connect to Distribution System	49,000	1	7,000
City of Kerrville - Increased Water Treatment and ASR Capacity	29,000	1	3,000
Eastern Kerr County Regional Water Supply Project	26,000	1	3,000
City of Del Rio - Develop a Wastewater Reuse Program	49,000	1	3,000
City of Kerrville - Increase Wastewater Reuse	29,000	1	3,000
City of Bandera - Surface Water Acquisition, Treatment and ASR	2,000	1	2,000
City of Kerrville - Explore and Develop New Ellenburger Aquifer Well Supply	29,000	1	1,000
City of Del Rio - Water Treatment Plant Expansion	49,000	1	1,000
Fort Clark Springs MUD - Increase Storage Facility	1,000	1	1,000
Bandera County Other - Drought Management (BCRAGD) (San Antonio)	22,000	1	1,000
<i>Other recommended strategies</i>	<i>na</i>	<i>47</i>	<i>2,000</i>

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

Recommended water management strategy project	Online decade	Sponsor(s)	Capital Cost
City of Bandera - Surface Water Acquisition, Treatment and ASR	2030	Bandera	\$34,188,000
EKCRWSP - Construction of Off-Channel Surface Water Storage	2030	County-Other (Kerr)	\$25,231,000
EKCRWSP - Construction o Surface Water Treatment Facilities and Transmission Lines	2030	County-Other (Kerr)	\$22,829,000
EKCRWSP - Construction of Desalination Plant	2030	County-Other (Kerr)	\$21,126,000
City of Kerrville - Increased Water Treatment and ASR Capacity	2030	Kerrville	\$15,393,000
City of Kerrville - Explore and Develop New Ellenburger Aquifer Well Supply	2020	Kerrville	\$14,493,000
City of Del Rio - Additional Groundwater Well	2020	Del Rio Utilities Commission	\$12,695,000
City of Kerrville - Water Loss Audit and Main-Line Repair	2020	Kerrville	\$12,636,000
City of Kerrville - Increase Wastewater Reuse	2020	Kerrville	\$12,570,000
City of Del Rio - Water Treatment Plant Expansion	2030	Del Rio Utilities Commission	\$8,646,000
<i>Other recommended projects</i>	<i>various</i>	<i>35 various</i>	<i>\$40,058,000</i>
Total capital cost			\$219,865,000

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	0	0	0	0	0	0
Livestock	287	287	287	287	287	287
Manufacturing	0	0	0	0	0	0
Mining	0	0	0	0	0	0
Municipal County-Other	217	257	276	283	289	658
Municipal Utility	0	0	0	0	0	0
Steam Electric Power	0	0	0	0	0	0
Total unmet needs	504	544	563	570	576	945

AGENDA ITEM MEMO

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

FROM: William Alfaro, Planner, Regional Water Planning
Sarah Backhouse, Manager, Regional Water Planning

SUBJECT: Approval of the 2021 Region M Regional Water Plan

ACTION REQUESTED

Consider approval of the 2021 Regional Water Plan (RWP) for the Rio Grande (Region M) 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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Jeff Walker, Executive Administrator

The Executive Administrator (EA) has conducted a review of the final adopted Region M 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 141,000 acre-feet per year in 2020 and 508,000 acre-feet per year in 2070.
2. The recommended water management strategies in the 2021 Region M RWP meets all identified needs in the plan except for approximately 847,000 acre-feet per year associated with irrigation, manufacturing, mining, and steam-electric power uses in 2020 decreasing to approximately 649,000 acre-feet per year associated with

irrigation, manufacturing, mining, and steam electric power uses in 2070. These needs were left unmet by the planning group due to limited supply and limited, economically feasible water supply options.

3. The total capital cost of the 131 recommended projects in the 2021 Region M RWP is approximately \$1.7 billion.
4. Conservation accounts for 54.3 percent of 2070 strategy volumes.
5. Surface water development, including the Banco-Morales minor reservoir accounts for 25.7 percent of 2070 strategy volumes. Groundwater desalination and seawater desalination account for 3.7 percent and 0.2 percent of the 2070 strategy volumes, respectively.
6. The Region M RWPG formally adopted their final 2021 RWP on October 7, 2020.
7. The EA has reviewed the adopted 2021 Region M RWP and determined that the plan complies with statute and rules.
8. The EA has reviewed the 2021 Region M RWP for interregional conflicts and has found none.

RECOMMENDATION

The EA recommends approval of the 2021 Region M RWP.

Attachment: Data Summary of the 2021 Region M RWP

Region M 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	1,961,000	2,379,000	2,795,000	3,212,000	3,626,000	4,029,000
Existing supplies	Surface water	828,000	828,000	826,000	825,000	826,000	826,000
	Groundwater	55,000	55,000	56,000	56,000	56,000	56,000
	Reuse	13,000	14,000	14,000	14,000	14,000	15,000
	Total water supplies	896,000	898,000	895,000	896,000	897,000	897,000
Demands	Municipal Utility	307,000	365,000	423,000	483,000	544,000	605,000
	Municipal County-other	9,000	9,000	11,000	12,000	14,000	15,000
	Manufacturing	4,000	5,000	5,000	5,000	5,000	5,000
	Mining	17,000	16,000	15,000	13,000	10,000	10,000
	Irrigation	1,427,000	1,381,000	1,335,000	1,290,000	1,244,000	1,198,000
	Steam-electric	15,000	15,000	15,000	15,000	15,000	15,000
	Livestock	5,000	5,000	5,000	5,000	5,000	5,000
	Total water demand	1,784,000	1,797,000	1,809,000	1,822,000	1,837,000	1,853,000
Needs	Municipal Utility	32,000	65,000	111,000	167,000	227,000	287,000
	Municipal County-other	4,000	4,000	6,000	7,000	9,000	10,000
	Manufacturing	1,000	1,000	1,000	1,000	1,000	1,000
	Mining	7,000	6,000	5,000	4,000	5,000	5,000
	Irrigation	889,000	844,000	798,000	753,000	707,000	662,000
	Steam-electric	5,000	5,000	5,000	5,000	5,000	5,000
	Total water needs	937,000	924,000	926,000	937,000	953,000	970,000
	Strategy supplies	Municipal Utility	63,000	123,000	187,000	252,000	308,000
Municipal County-other		4,000	5,000	7,000	8,000	11,000	12,000
Manufacturing		<500	1,000	1,000	1,000	1,000	1,000
Mining		2,000	2,000	1,000	1,000	1,000	1,000
Irrigation		70,000	81,000	92,000	102,000	111,000	121,000
Steam-electric		2,000	8,000	8,000	8,000	8,000	8,000
Total strategy supplies		141,000	219,000	296,000	372,000	440,000	508,000

* 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
Advanced Municipal Conservation	3,894,000	53	129,000
Urbanization (<i>Conversion of Irrigation Water Rights to DMI</i>)	3,817,000	43	114,000
ID Conservation	1,651,000	25	65,000
Reuse	2,415,000	14	52,000
On-Farm Irrigation Conservation	na	8	27,000
Desalination	1,419,000	12	20,000
Municipal Infrastructure Improvements	1,394,000	14	18,000
Drought Management	3,628,000	40	18,000
Hidalgo and Cameron County ID No. 9 Conservation	553,000	8	13,000
Hidalgo County ID No. 2 Conservation	1,288,000	8	10,000
<i>Other recommended strategies</i>	na	68	43,000

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

Recommended water management strategy project	Online decade	Sponsor(s)	Capital Cost
Brownsville - Non-Potable Water Reuse Pipeline	2030	Brownsville	\$99,249,000
Cameron County ID #2 Conservation	2020	Cameron County Irrigation District #2	\$79,856,194
Hidalgo County WID No. 3 Conservation	2020	Hidalgo County WID #3	\$70,572,603
Hidalgo and Cameron County ID No. 9 Conservation	2020	Hidalgo-Cameron County Irrigation District #9	\$63,146,985
La Feria ID Conservation	2020	La Feria Irrigation District-Cameron County #3	\$59,989,636
Delta Lake ID - ID Conservation	2020	Delta Lake Irrigation District	\$55,808,978
Pharr - Raw Water Reservoir Augmentation	2020	Pharr	\$53,015,000
Maverick County WCID - ID Conservation	2020	Maverick County WCID #1	\$50,136,923
McAllen - North WWTP Potable Reuse Phase I	2030	McAllen	\$49,777,000
ERHWSC - Surface WTP Phase I	2020	East Rio Hondo WSC	\$45,625,000
<i>Other recommended projects</i>	<i>various</i>	<i>121 various</i>	<i>\$1,099,879,741</i>
Total capital cost			\$1,727,057,060

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	838,660	790,660	760,761	722,554	682,467	643,902
Livestock	0	0	0	0	0	0
Manufacturing	439	635	635	635	634	635
Mining	5,084	4,491	3,559	3,585	3,750	4,566
Municipal County-Other	0	0	0	0	0	0
Municipal Utility	0	0	0	0	0	0
Steam Electric Power	3,095	449	349	349	349	349
Total unmet needs	847,278	796,235	765,304	727,123	687,200	649,452