GROUNDWATER MANAGEMENT AREA 9

JOINT PLANNING COMMITTEE MEETING

June 18, 2024

AGS
Advanced Groundwater Solutions, LLC

CLARIFICATION / DISCLAIMER

- GCDs in GMA 9 will determine DFCs, not the hydrogeologic consultant.
- Chapter 36 of the Texas Water Code contains concepts that blend legal and technical issues. AGS is not a law firm and we do not provide legal advice. Any statements relating to regulatory or legal issues shall not be considered legal advice.
- AGS may provide commentary based on our experience working with groundwater conservation districts, permitting, joint groundwater planning, GCD rules and management plans, water supply entities, and our general understanding of industry practices.

9 FACTORS TO CONSIDER

Aquifer Uses or Conditions	Supply Needs & Management Strategies	Hydrological Conditions
Environmental Impacts	Subsidence Impacts	Socioeconomic Impacts
Private Property Rights	DFC Feasibility	Other Relevant Information

AGENDA ITEM 8

Presentation by AGS on three of the nine factors in accordance with TWC 36.108(d)

- (1) aquifer uses or conditions within the management area, including conditions that differ substantially from one geographic area to another;
- (4) other environmental impacts, including impacts on spring flow and other interactions between groundwater and surface water;
- (7) the impact on the interests and rights in private property, including ownership and the rights of management area landowners and their lessees and assigns in groundwater as recognized under Section 36.002;

BALANCE TEST FOR DESIRED FUTURE CONDITIONS

Highest Practicable Level
of Groundwater Production

Conservation,
Preservation, Protection,
Recharging, and Prevention
of Waste of Groundwater,
and Control of Subsidence

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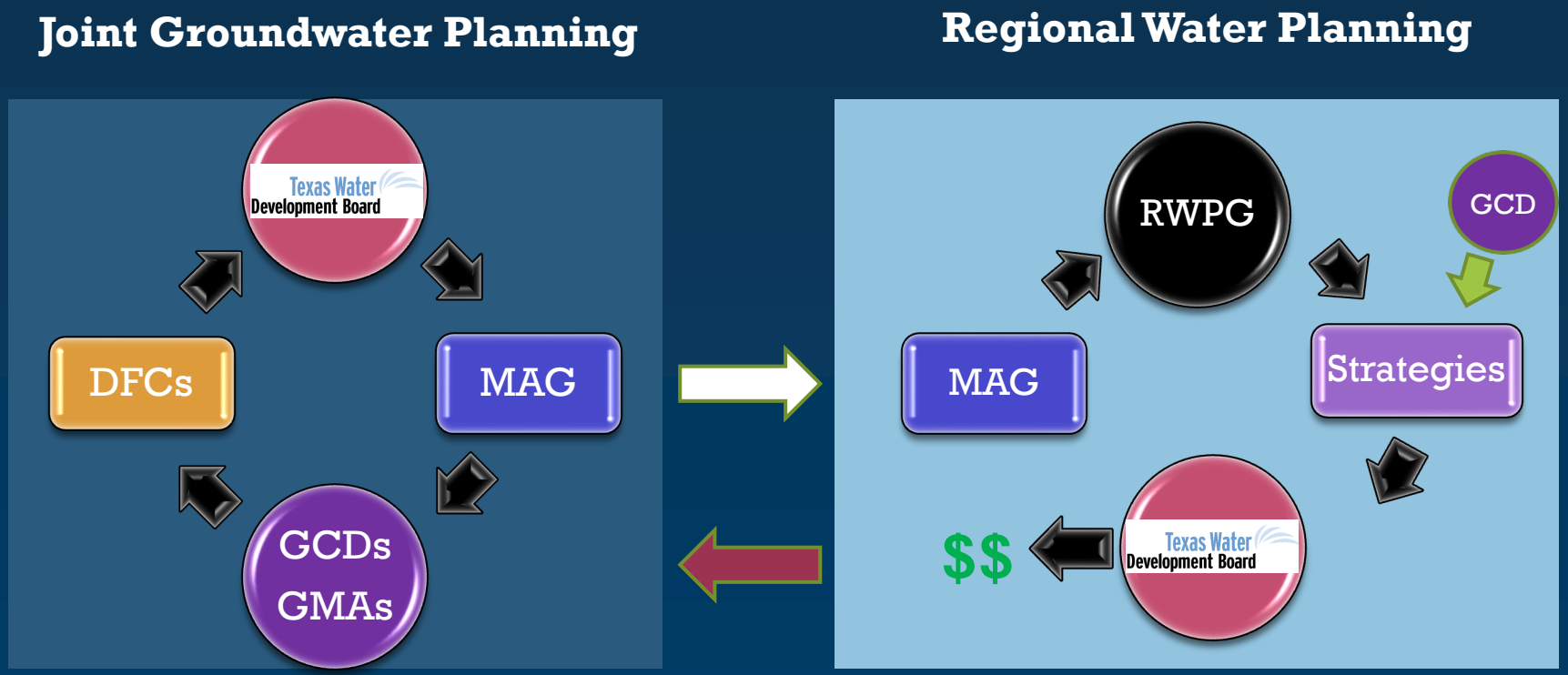
TEXAS GROUNDWATER PLANNING CYCLE



1st Factor (Section 36.108(d))- "Aquifer Uses and Conditions"

- The districts shall consider:

  "aquifer uses or conditions within the management area, including conditions that differ substantially from one geographic area to another"

- This includes:
  - How are people using the aquifers?
  - Are aquifer conditions different across the GMA? For example, quality or productivity

Aquifer Uses and Conditions
Water Use Survey in GMA-9

- Estimated water use survey pumping for Trinity Aquifer in GMA 9 counties in 2021 (acre-feet per year)
- Note that this is for the entire Trinity Aquifer- use from the Upper/Middle/Lower Trinity varies across the GMA

County	Municipal	Manufacturing	Mining	Steam Electric Power	Irrigation	Livestock	Total (county)
BANDERA	2,242	0	0	0	912	82	**3,236**
BEXAR	20,185	0	529	0	496	29	**21,239**
BLANCO	846	0	17	0	595	131	**1,589**
COMAL	8,911	0	1,129	0	149	63	**10,252**
HAYS	3,929	0	8	0	256	18	**4,211**
KENDALL	3,361	3	0	0	262	292	**3,918**
KERR	2,855	0	14	0	985	92	**3,946**
MEDINA	1,884	0	587	0	0	160	**2,631**
TRAVIS	3,908	27	0	0	551	45	**4,531**
Total (use)	**48,121**	**30**	**2,284**	**0**	**4,206**	**912**	**55,553**

Aquifer Uses and Conditions
Water Use Survey in GMA-9

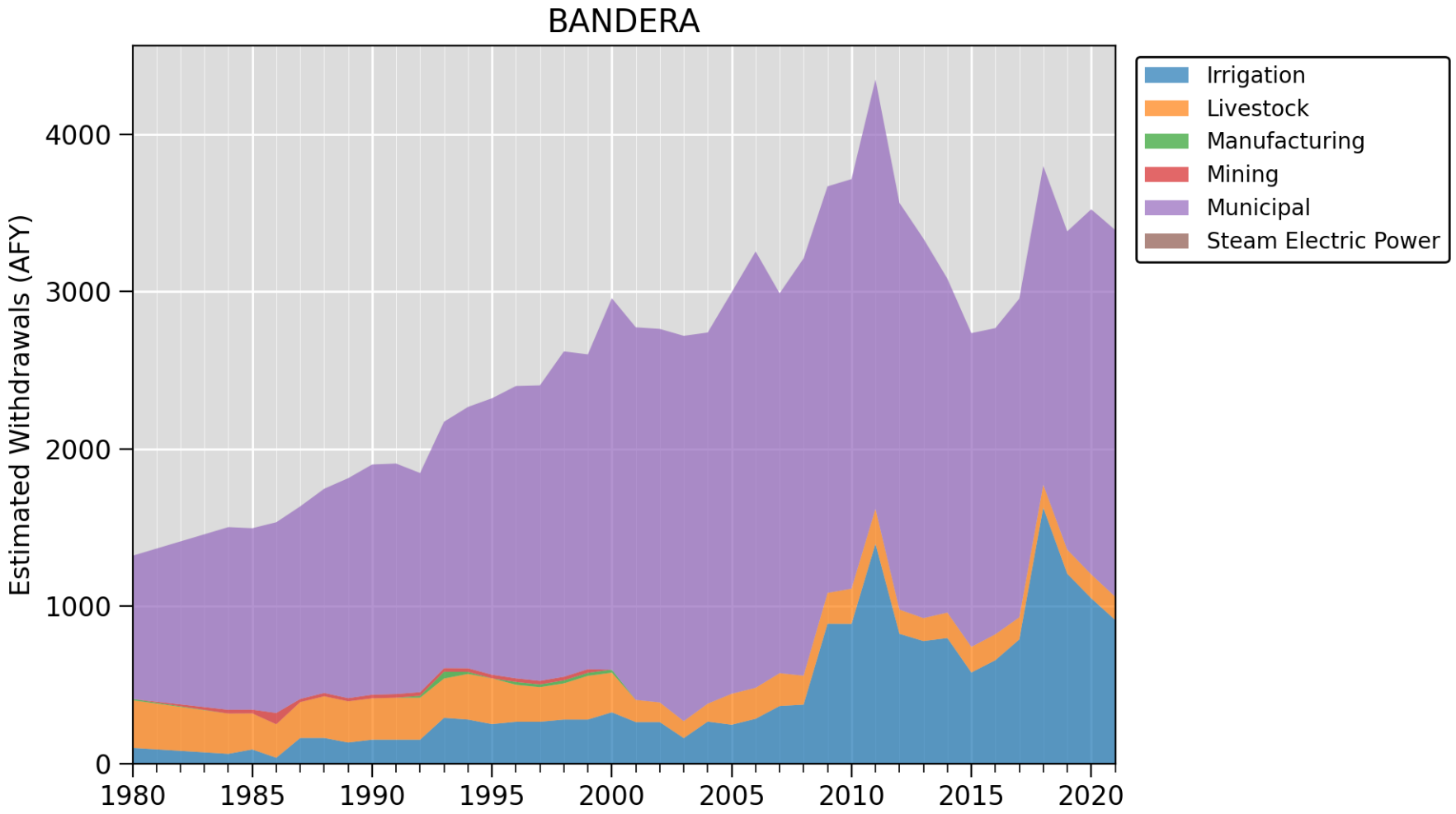
- Estimated water use survey pumping for Edwards-Trinity (Plateau) Aquifer in GMA 9 counties in 2021 (acre-feet per year)- Note: does not include counties where the aquifer was declared non-relevant.

County	Municipal	Manufacturing	Mining	Steam Electric Power	Irrigation	Livestock	Total (county)
BANDERA	70	0	0	0	0	66	**136**
KENDALL	39	0	1	0	0	19	**59**
Total (use)	**109**	**0**	**1**	**0**	**0**	**85**	**195**

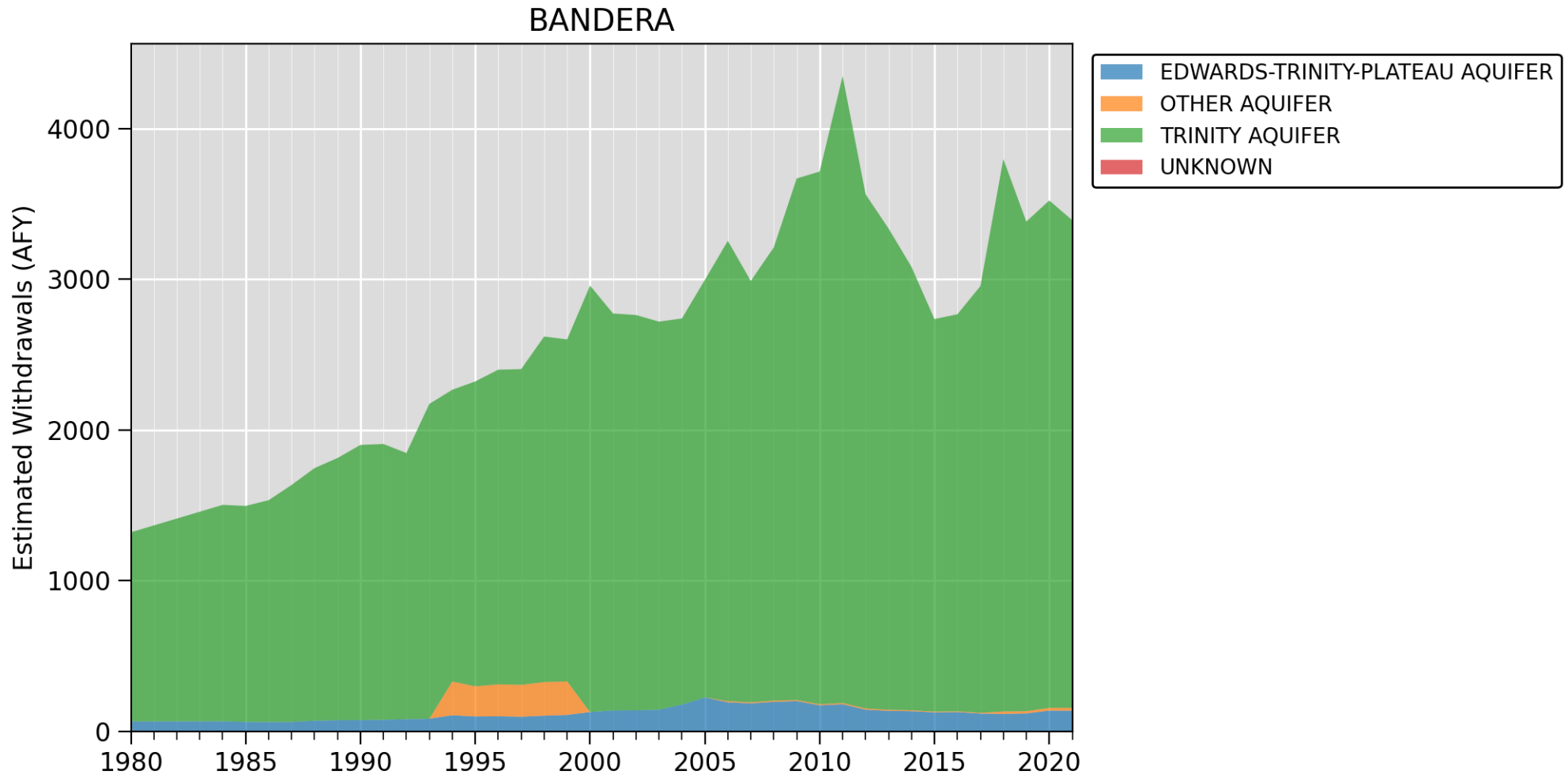
Aquifer Uses and Conditions
Water Use Survey in GMA-9

- WUS does not contain any data from Ellenburger-San Saba and Hickory aquifers in Kendall county.
- These aquifers were declared non-relevant for the other counties in GMA 9 during the third round of planning.
- The Marble Falls Aquifer was declared non-relevant during the third round of planning.

Aquifer Uses and Conditions
Water Use Survey in GMA-9



Aquifer Uses and Conditions
Water Use Survey in GMA-9



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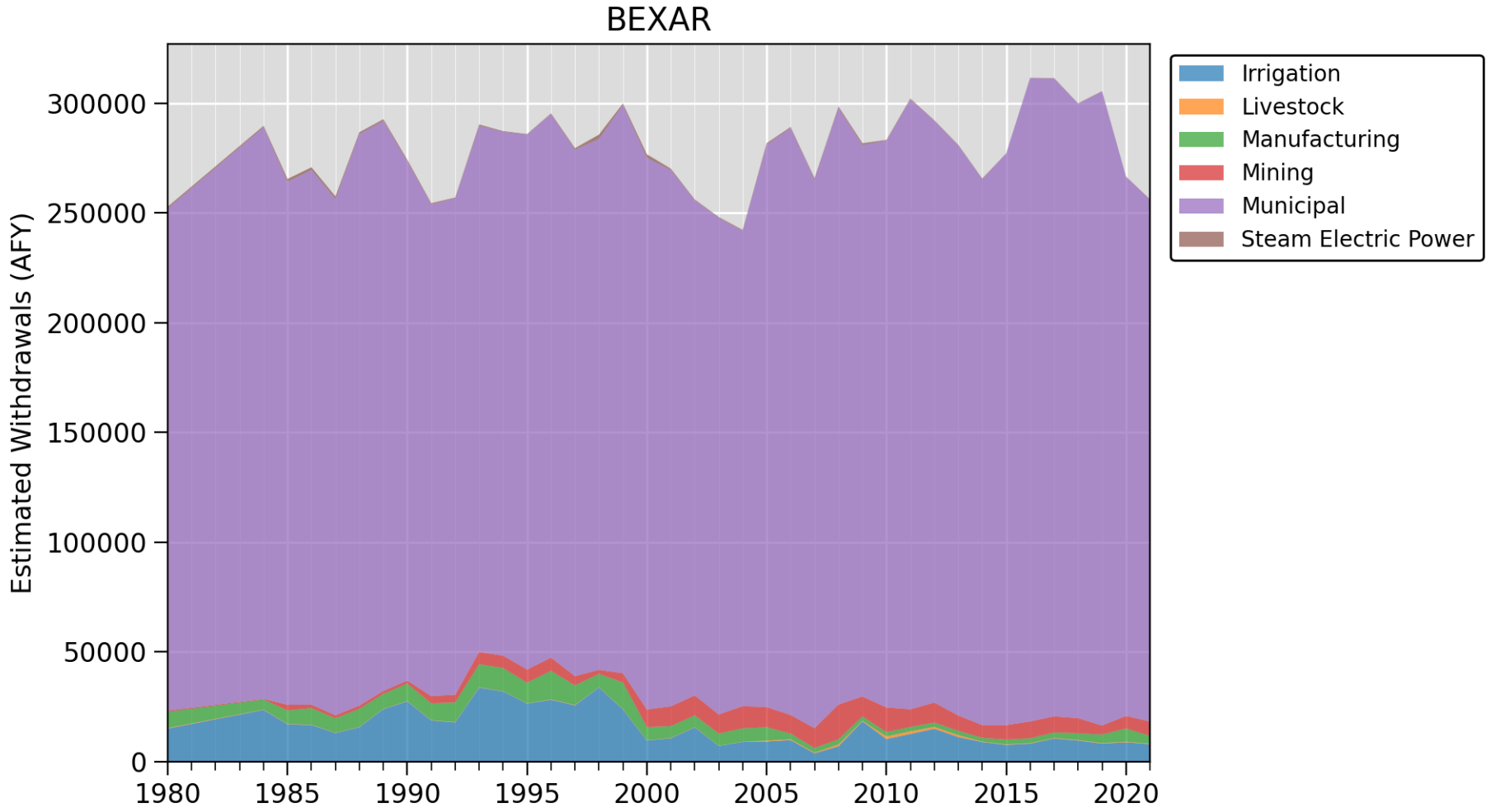

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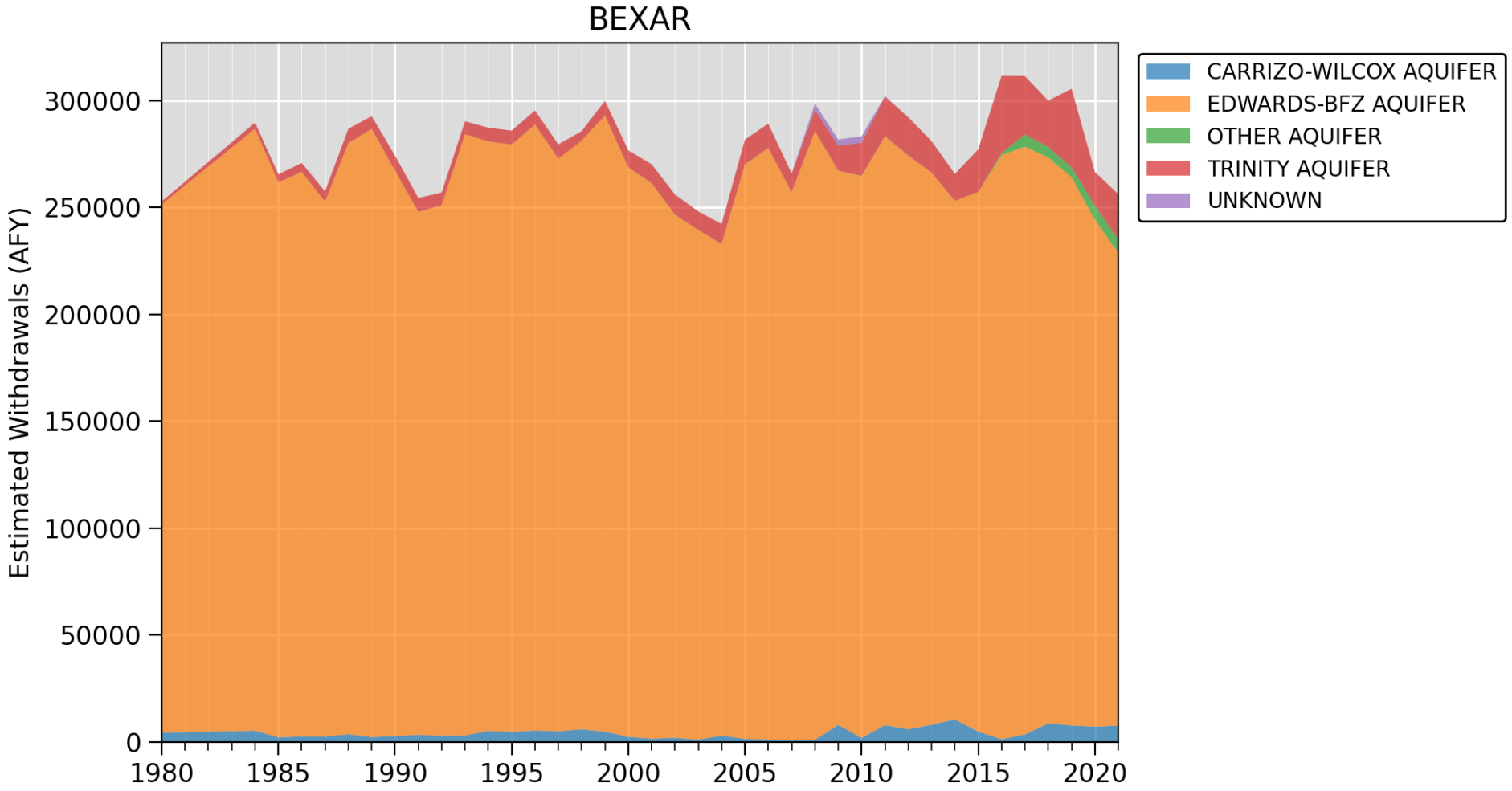

Aquifer Uses and Conditions
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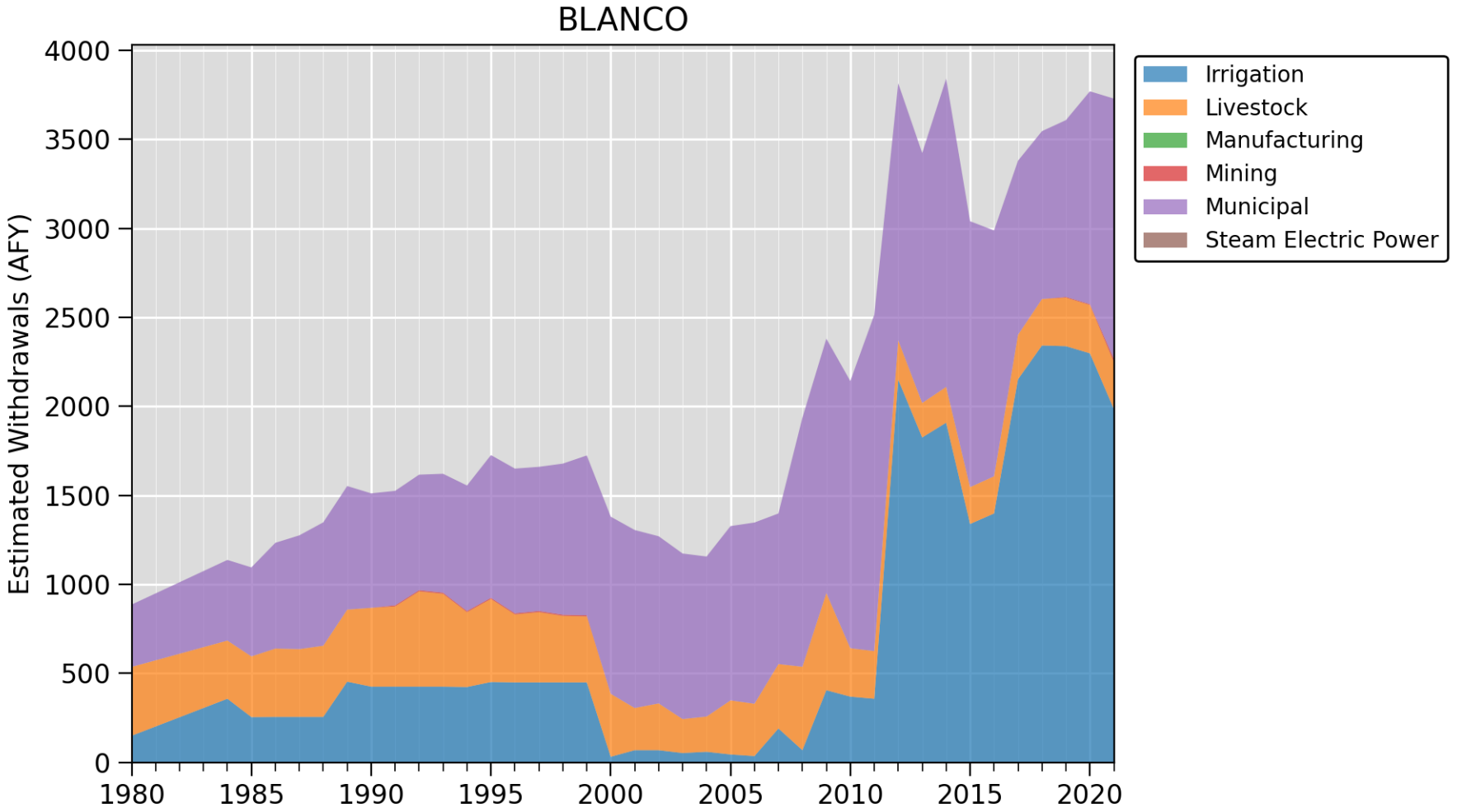

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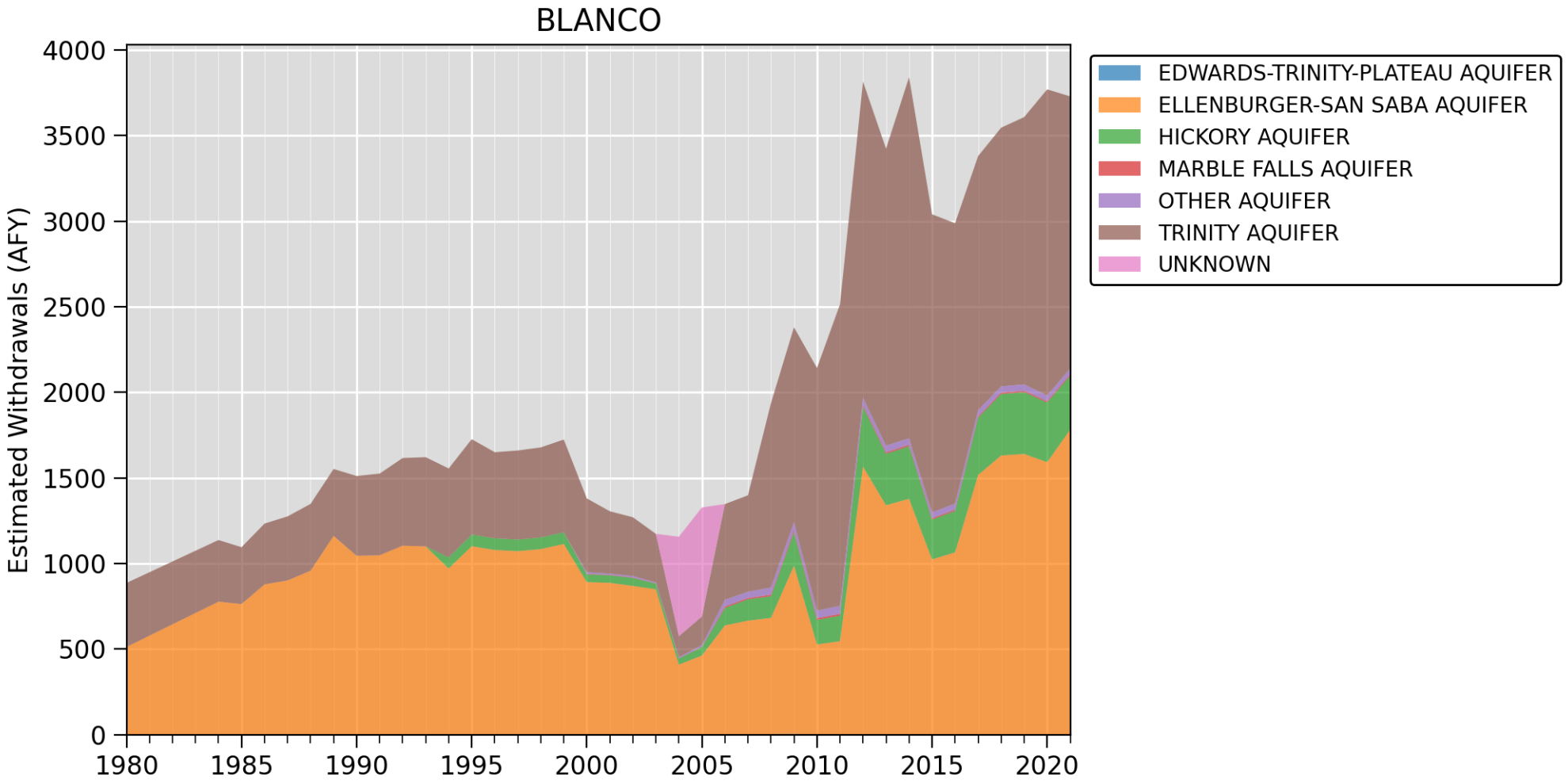

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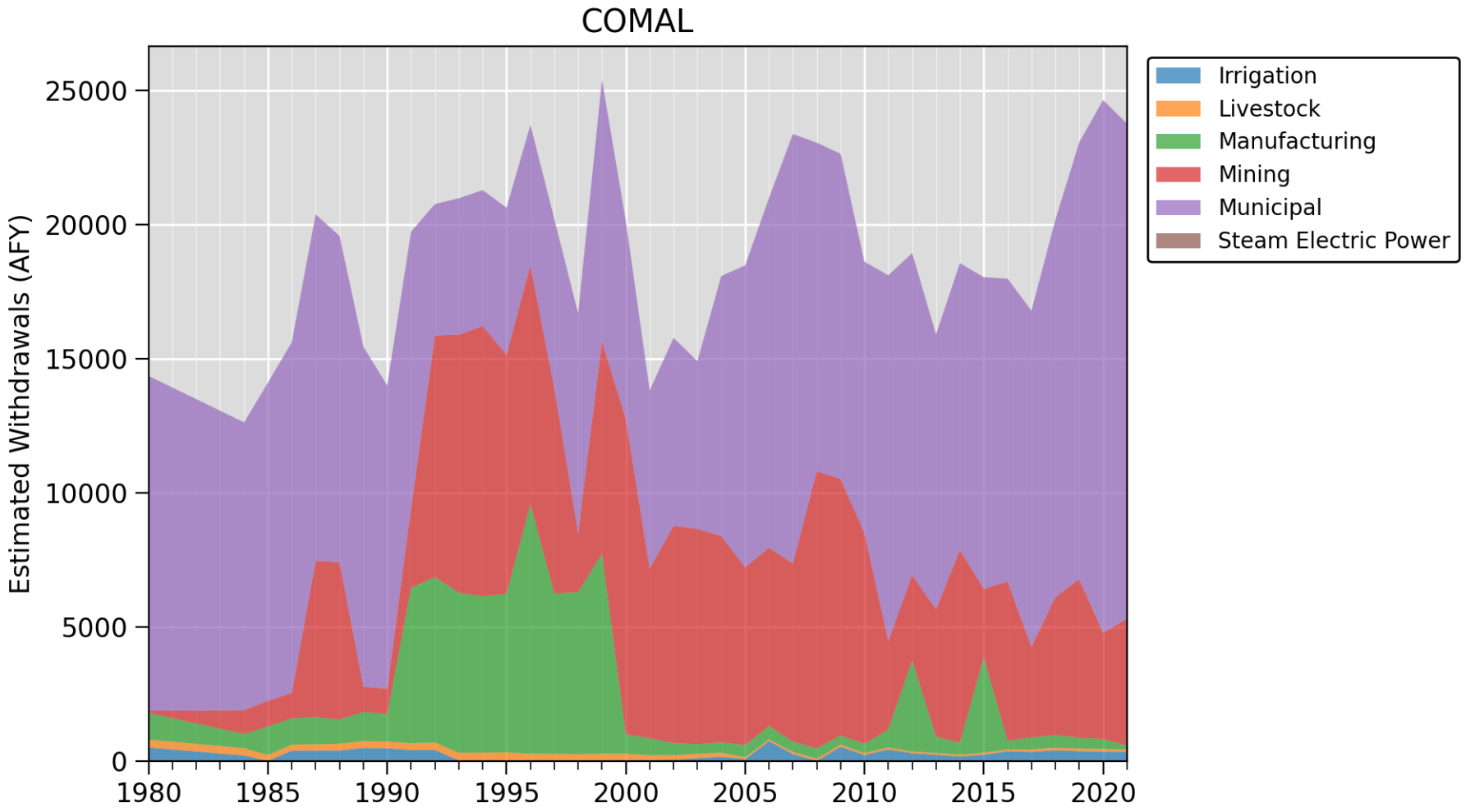

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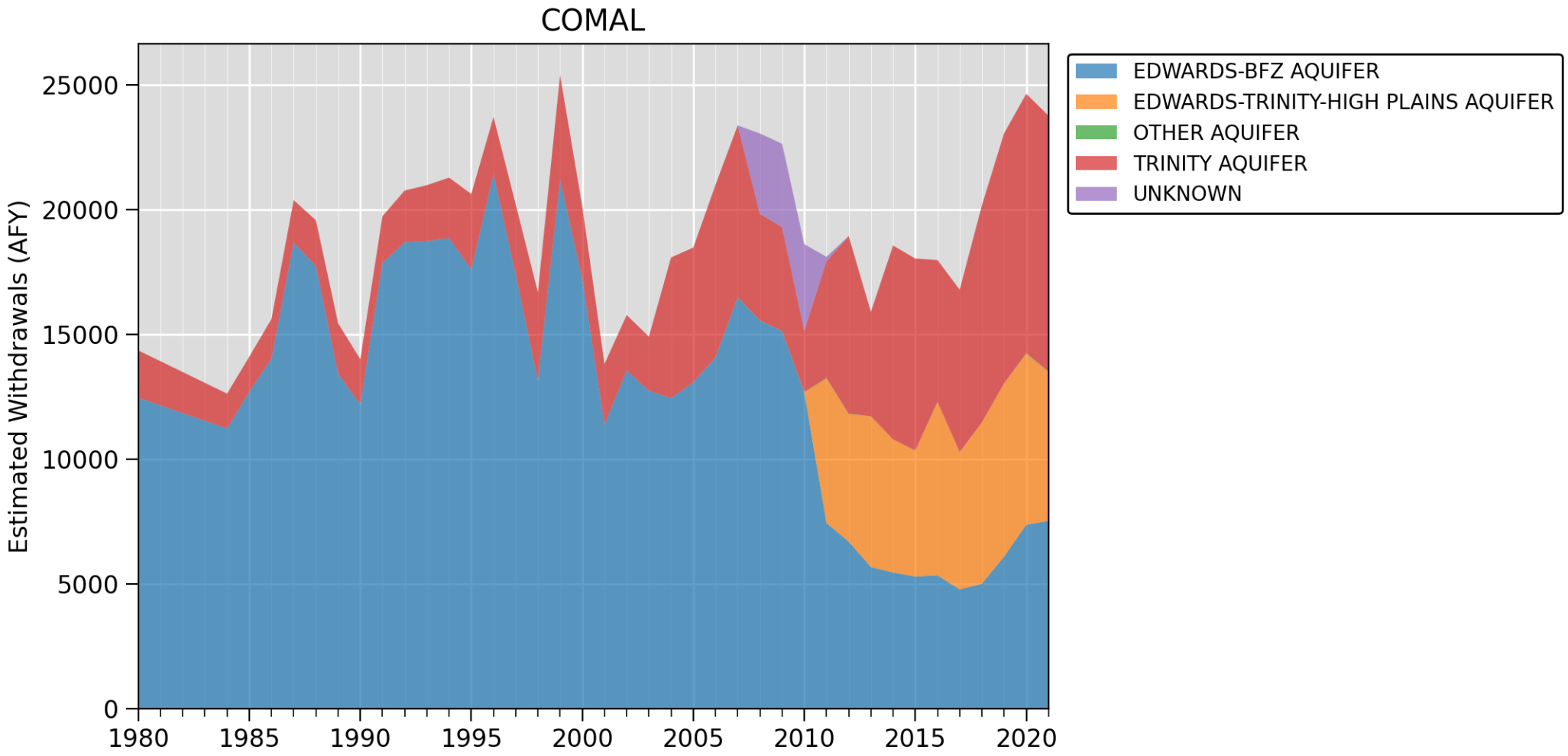

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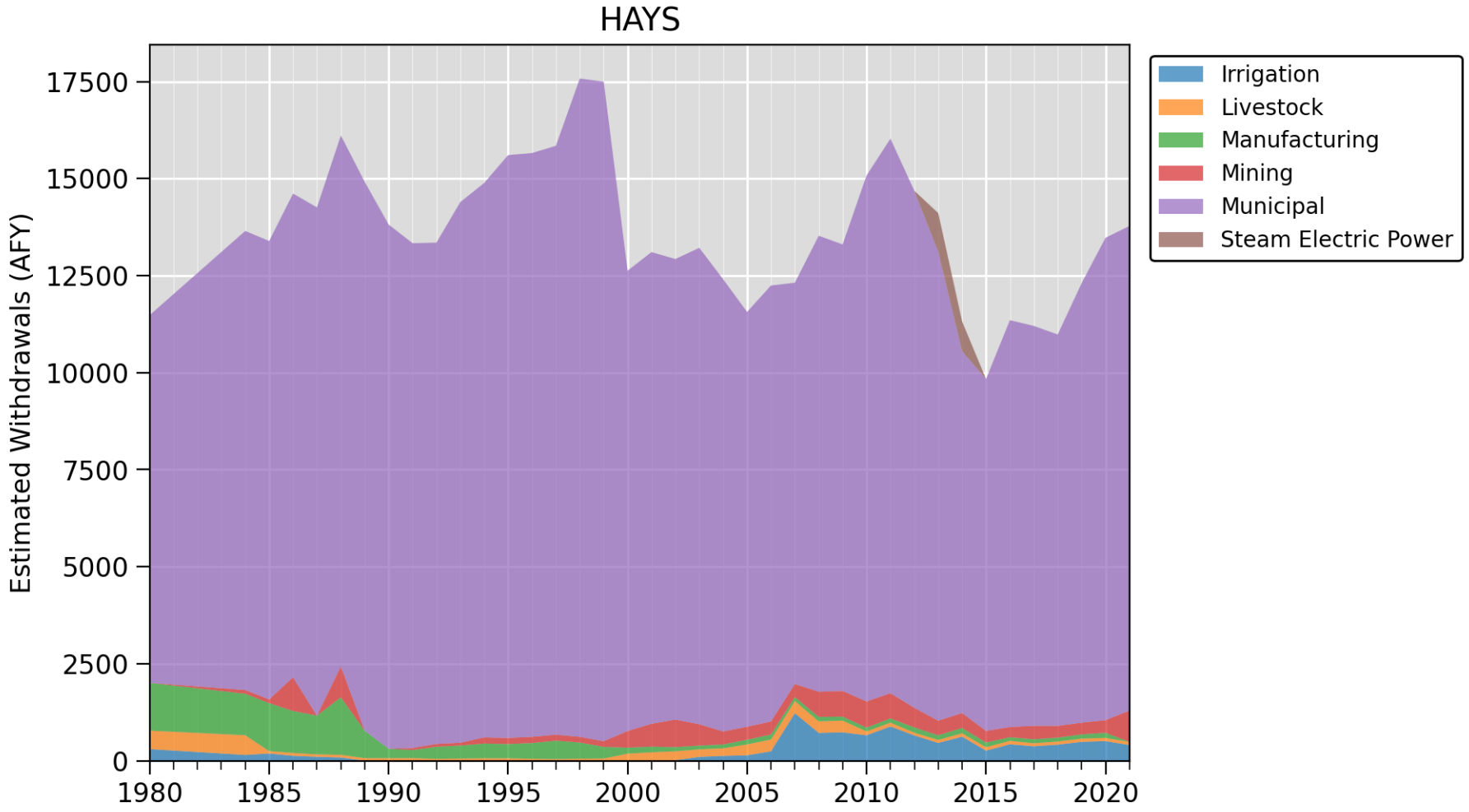

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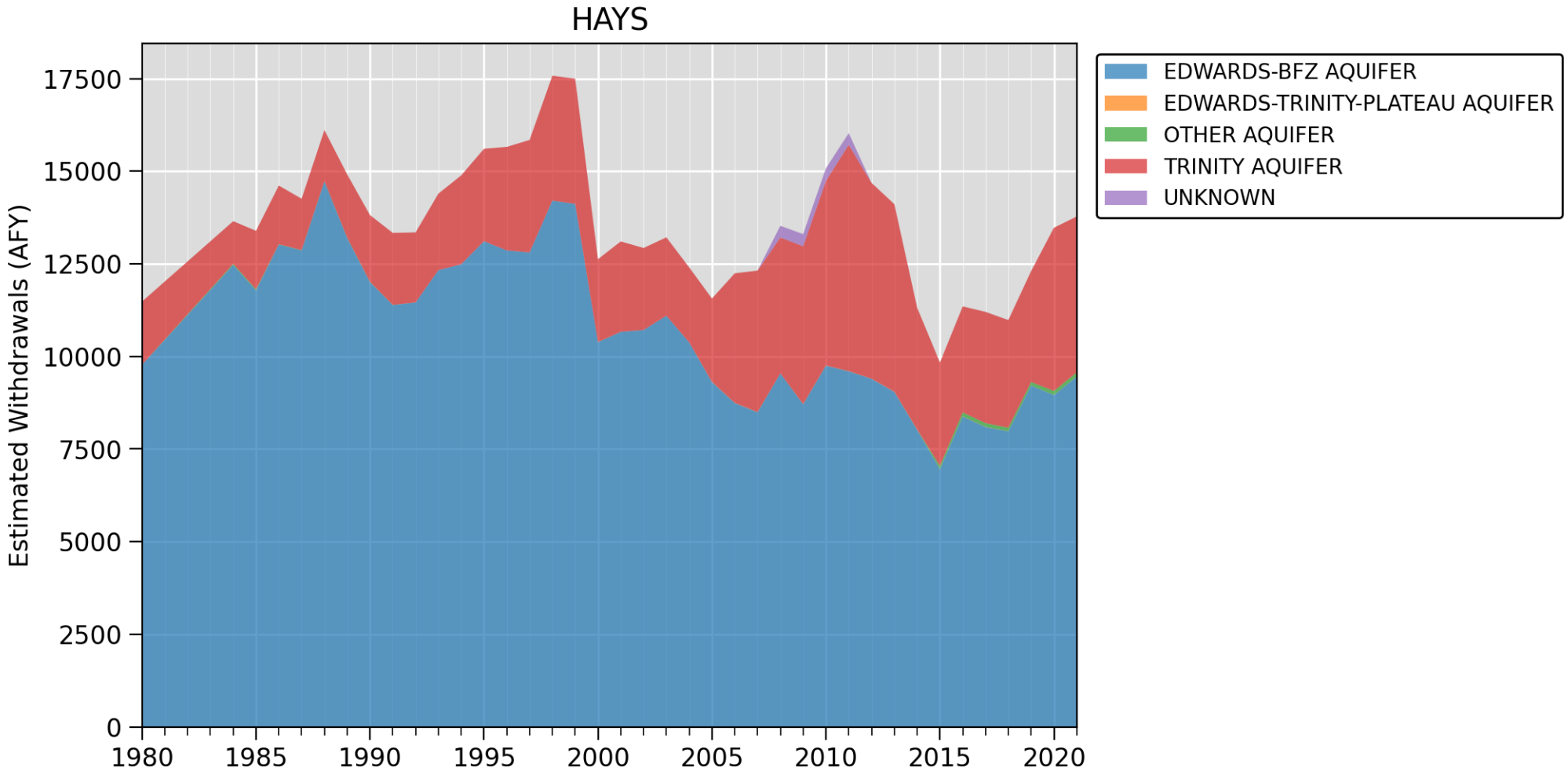

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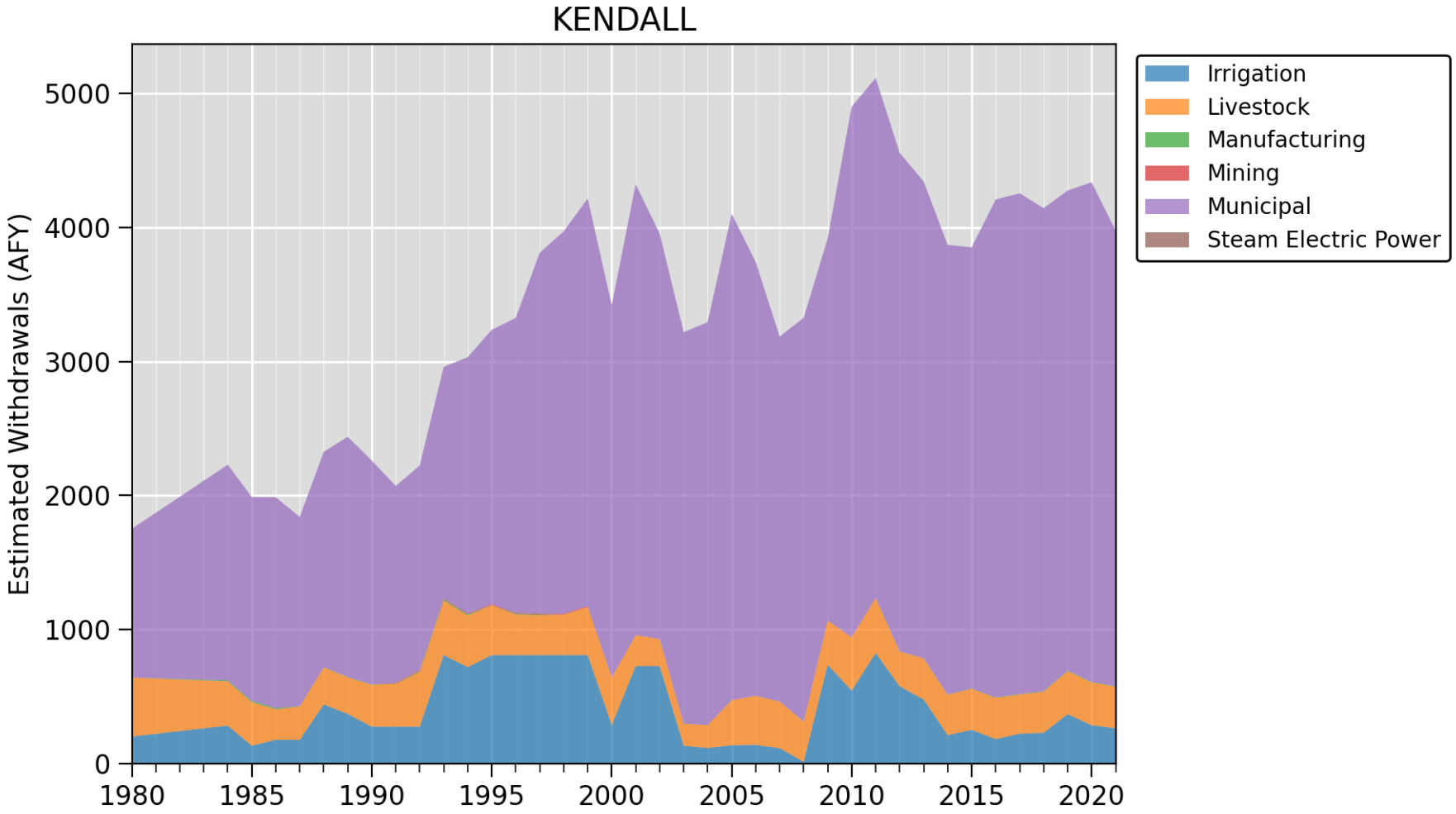

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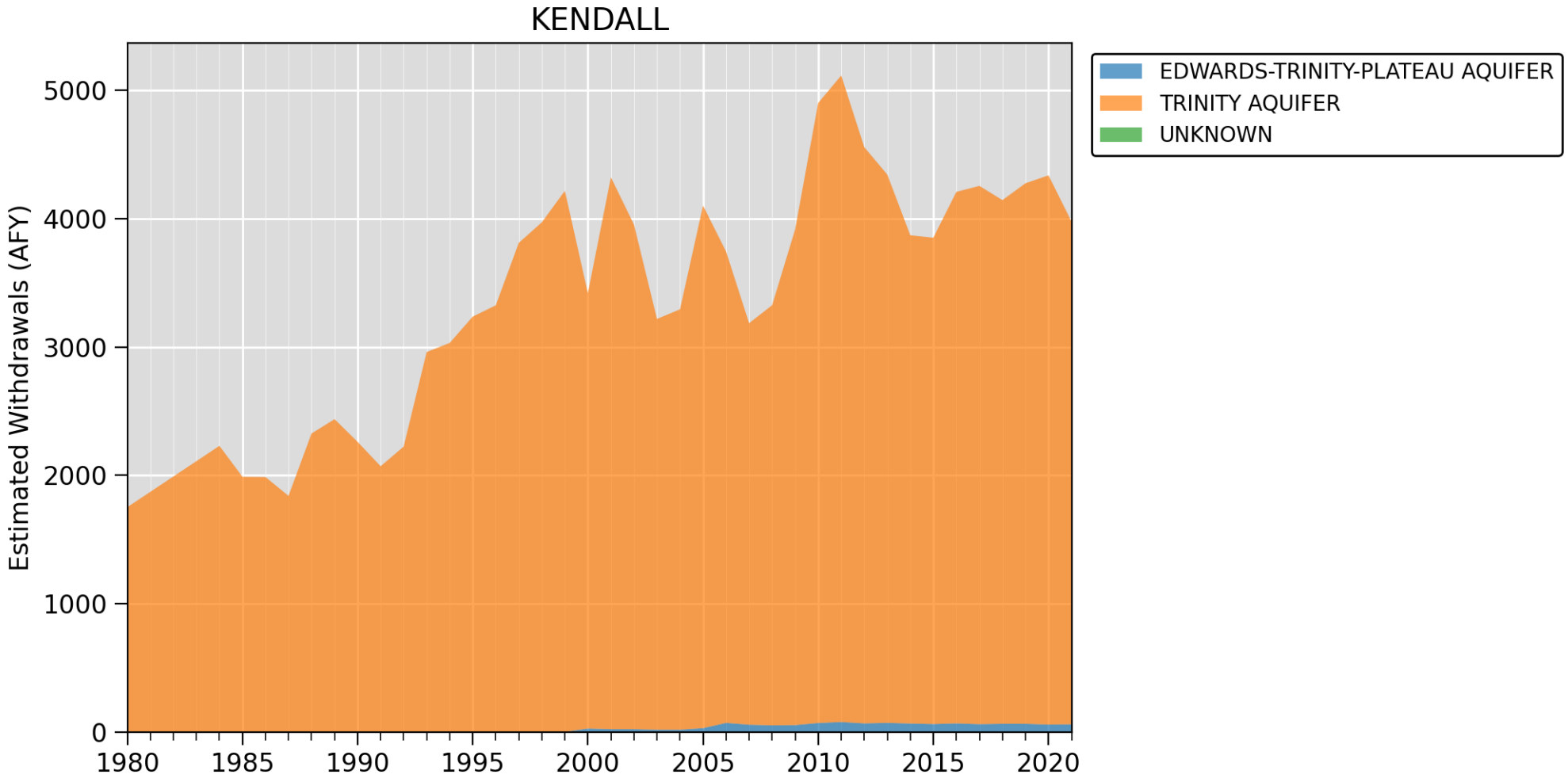

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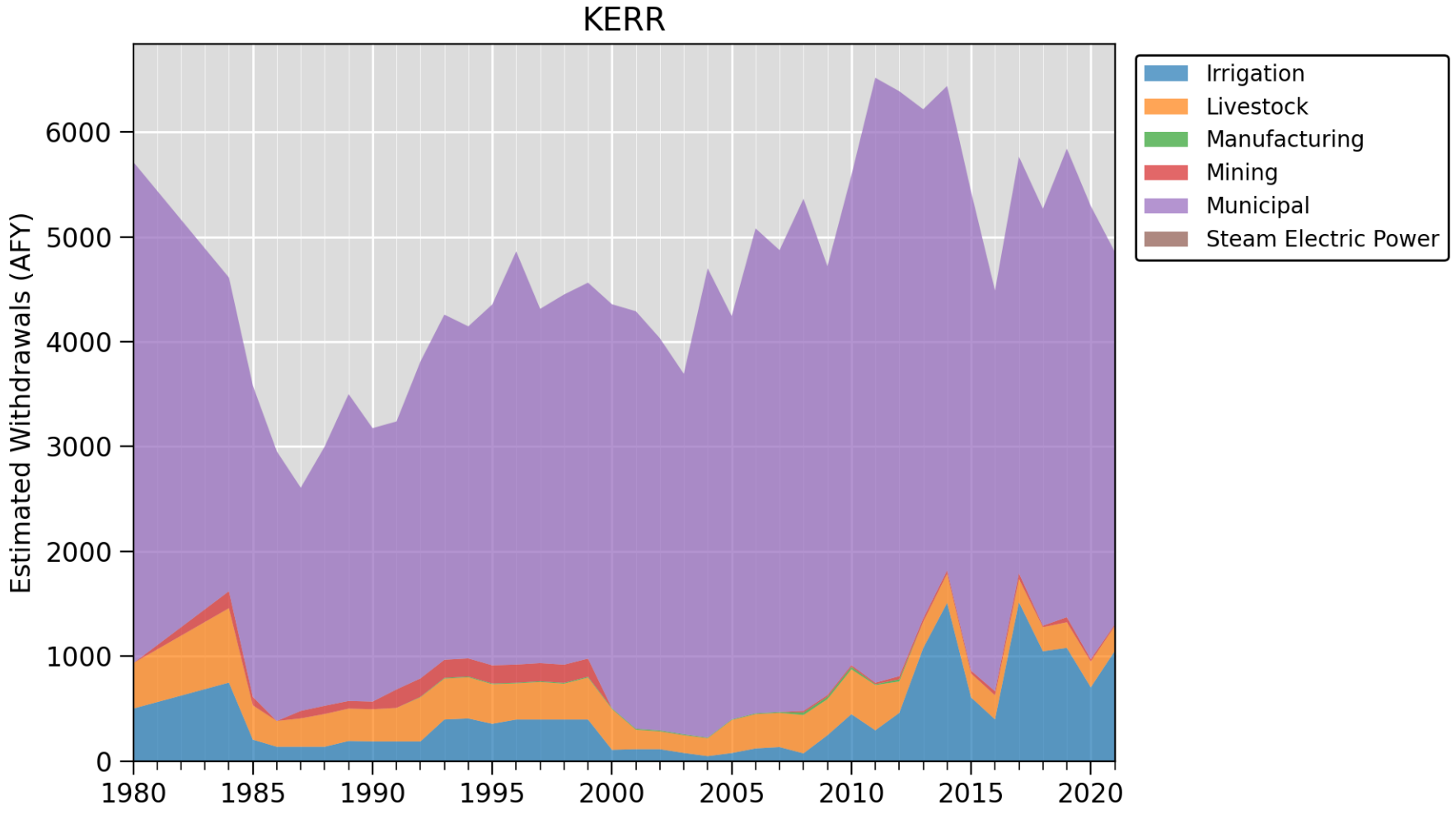

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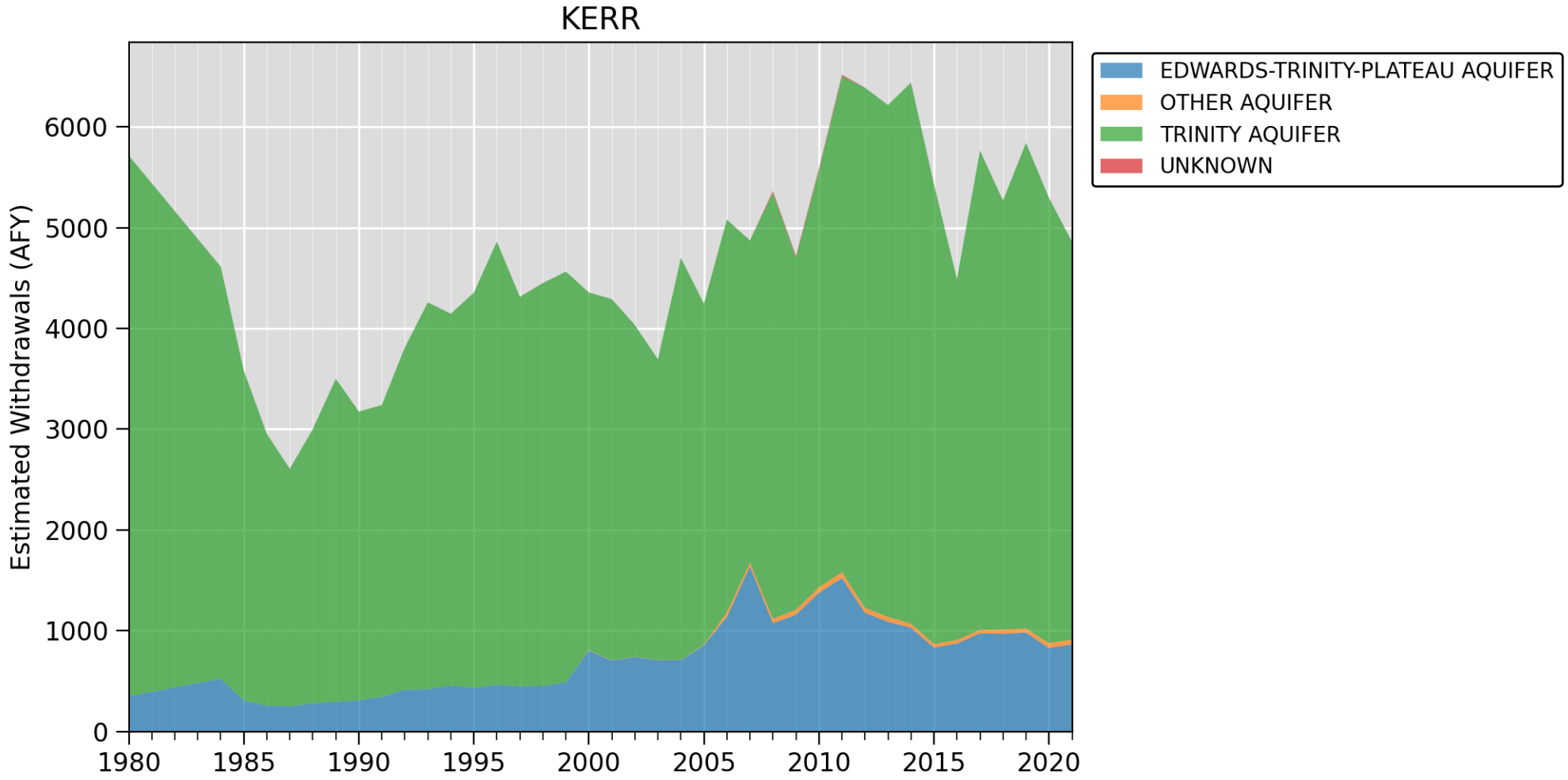

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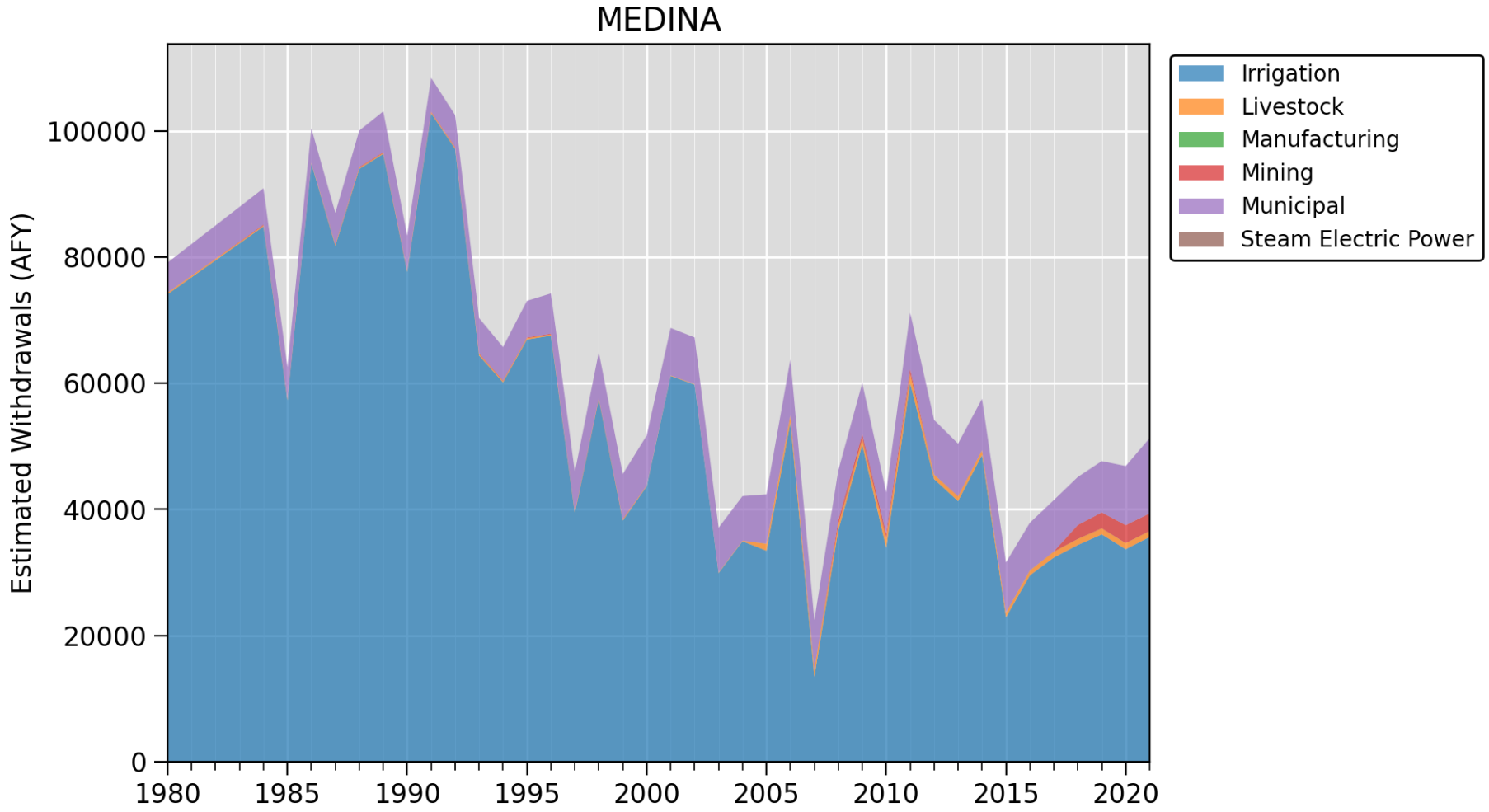

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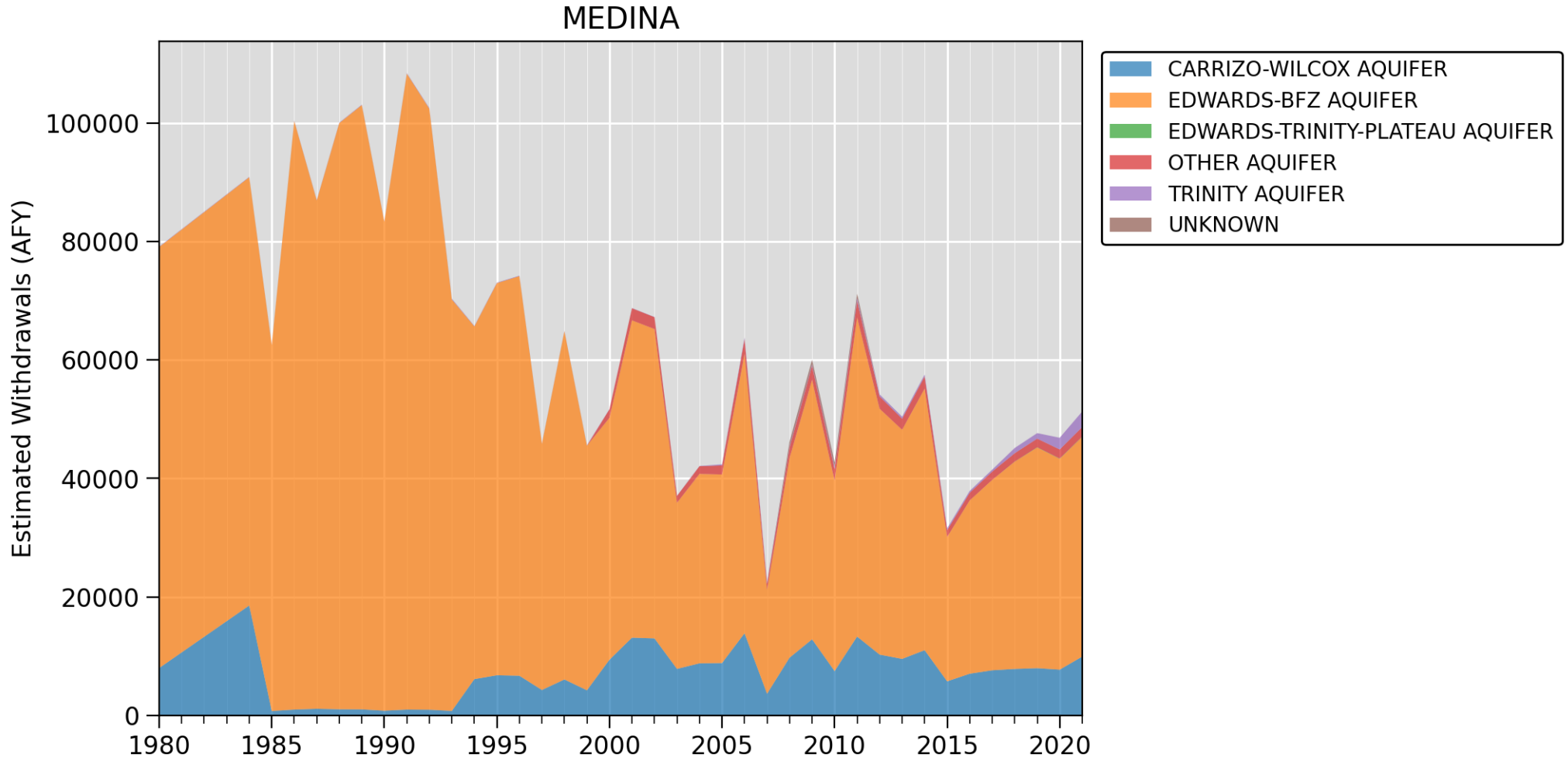

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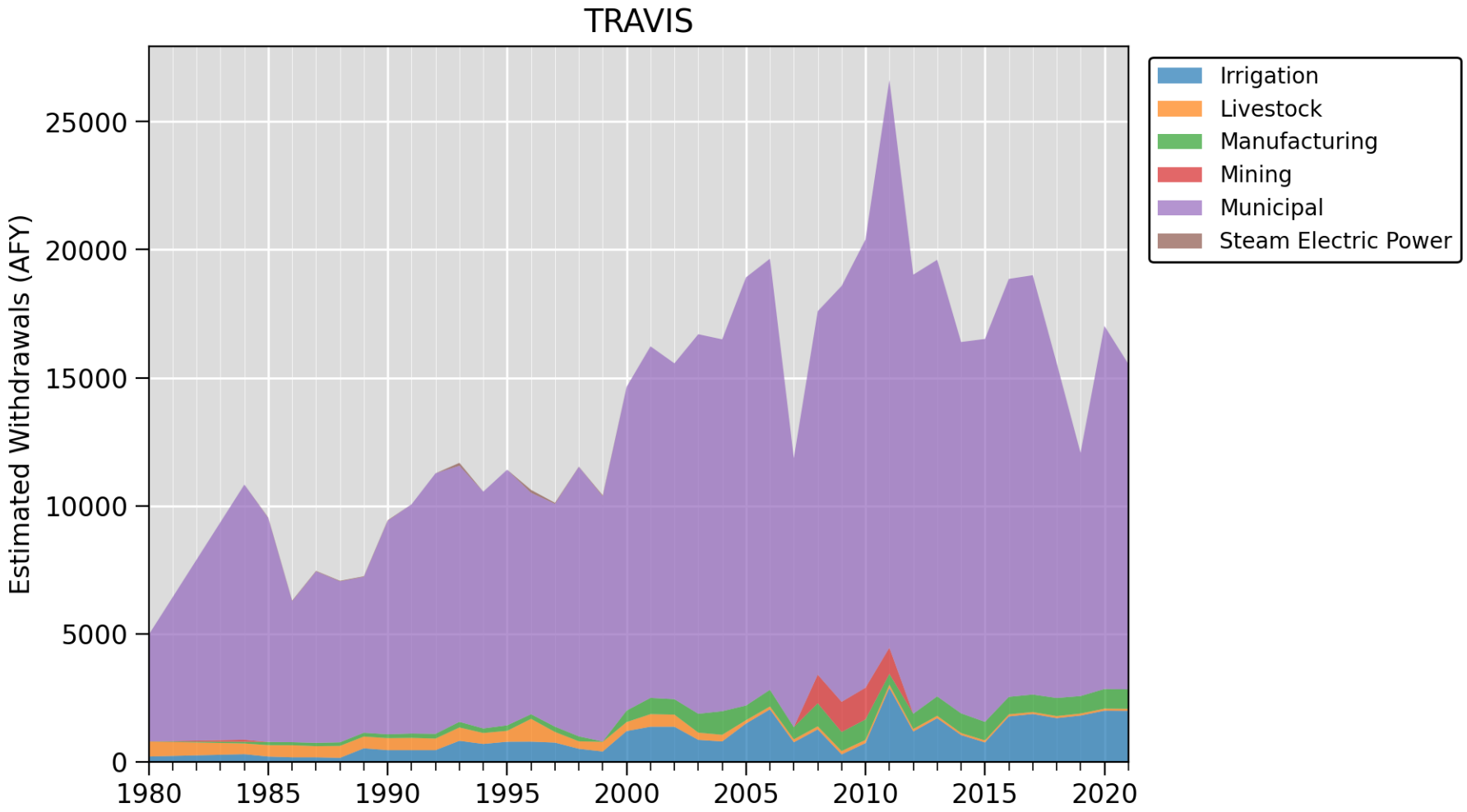

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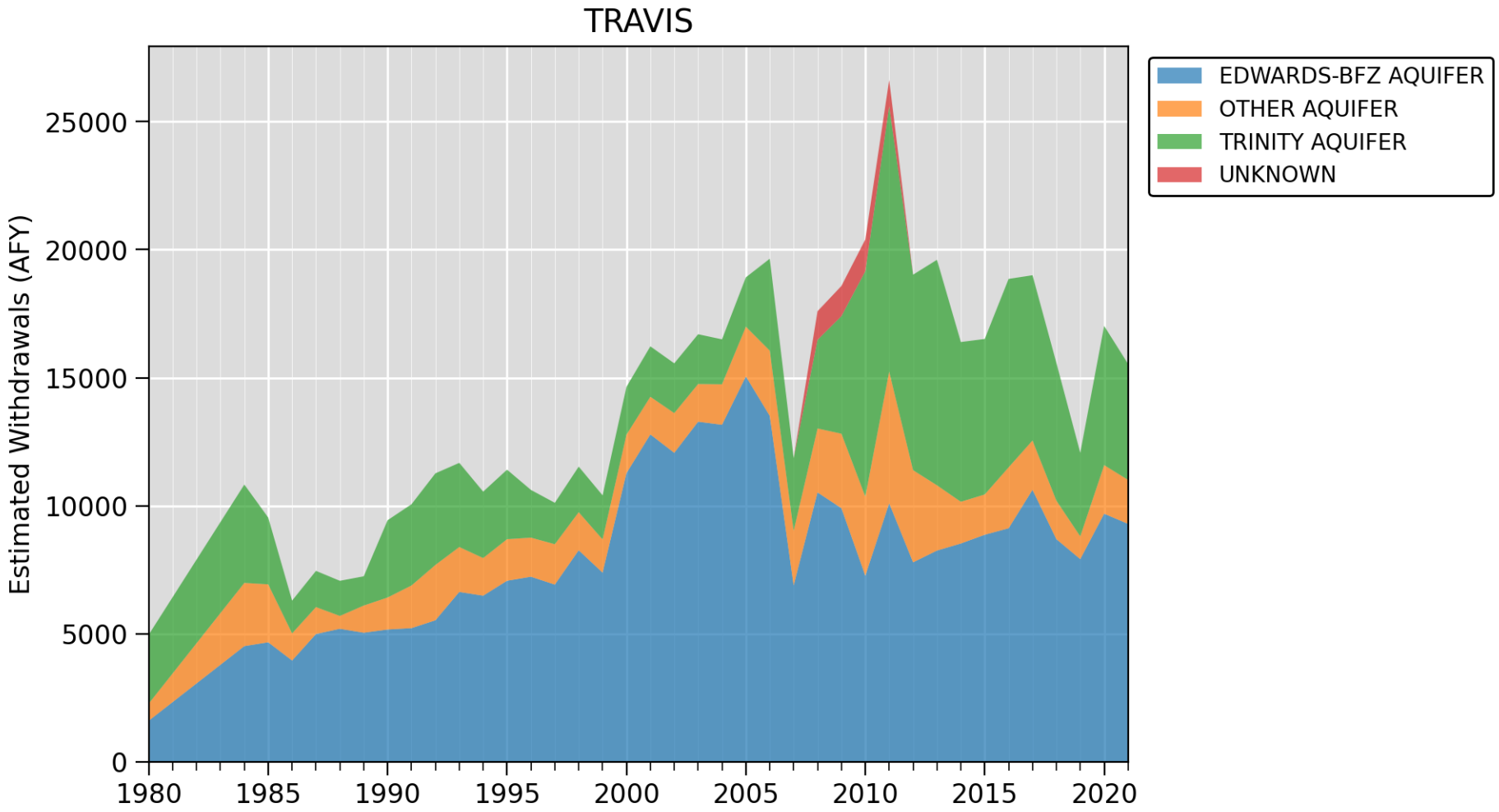


4th Factor (Section 36.108(d))- "Other Environmental Impacts"

- The districts shall consider:

  "other environmental impacts, including impacts on spring flow and other interactions between groundwater and surface water"

- Texas Water Code § 36.1071(3)(D) requires GCDs consider annual volume of water discharging from aquifer to springs and any surface water bodies including lakes, streams and rivers in developing Management Plans.
  - GMA 9 GCD adopted Management Plans include consideration of volumes from TWDB GAM runs.
  - GMA 9 GCD adopted Management Plans have various deadlines for adoption.
- How does the selected DFC affect discharge to surface water features (spring discharge and stream flow)?

4th Factor (Section 36.108(d)) "Other Environmental Impacts"

Texas Aquifers Study: Groundwater Quantity, Quality, Flow, and Contributions to Surface Water (TWDB, 2016)

Trinity Aquifer – "The Trinity Aquifer discharges to a large number of springs, with most discharging less than 10 cubic feet per second."

County	Outcrop area (square miles)	Average baseflow (cubic feet per second)	Median baseflow (cubic feet per second)
Bandera	589	81.7	26.1
Bexar	178	10.9	2.5
Blanco	571	57.6	14.9
Comal	322	41.5	14.6
Hays	353	57.3	13
Kendall	573	73	23.5
Kerr	274	42.5	19.7
Medina	121	11.9	3
Travis	393	51.1	8.2

Values are report for the entire county

4th Factor (Section 36.108(d)) "Other Environmental Impacts"

Texas Aquifers Study: Groundwater Quantity, Quality, Flow, and Contributions to Surface Water (TWDB, 2016)

Edwards-Trinity (Plateau) Aquifer – "Natural discharge from the Edwards-Trinity (Plateau) Aquifer to surface water occurs mostly from springs along the margins of the aquifer where the water table intersects the ground surface."

County	Outcrop area (square miles)	Average baseflow (cubic feet per second)	Median baseflow (cubic feet per second)
Bandera	209	33.5	12.1
Blanco	19	2	0.6
Kendall	90	10.3	3.6
Kerr	833	118.3	56.5

Values are reported for the entire county

Ellenburger-San Saba and Hickory Aquifers – "Precipitation and runoff contribute recharge to the Ellenburger-San Saba Aquifer in upland areas, with discharge occurring as stream baseflow at lower elevations."

Aquifer/County	Outcrop area (square miles)	Average baseflow (cubic feet per second)	Median baseflow (cubic feet per second)
Ellenburger-San Saba/Blanco	36	2	0.5
Hickory/Blanco	18	1	0.2

Values are reported for the entire county

4th Factor (Section 36.108(d)) "Other Environmental Impacts"

- Estimated Annual Discharge from Aquifer to Springs and any Surface Waterbody

Groundwater Conservation District	Trinity Aquifer (acre-feet/year)	Edwards-Trinity (Plateau) Aquifer (acre-feet/year)
Bandera County River Authority and Groundwater District	32,750	4,141
Blanco-Pedernales GCD	26,966	0
Cow Creek GCD	31,131	3,061
Comal Trinity GCD	15,601	-
Headwaters GCD	18,473	17,697
Hays Trinity GCD	22,439	-
Medina County GCD	6,412	-
Southwestern Travis GCD	12,654	-
Trinity Glen Rose GCD	10,347	-

Sources: GAM Run 23-017, GAM Run 22-012, GAM Run 22-010, GAM Run 21-003, GAM Run 20-003, GAM Run 19-026, GAM Run 19-027, GAM Run 19-025, GAM Run 19-011

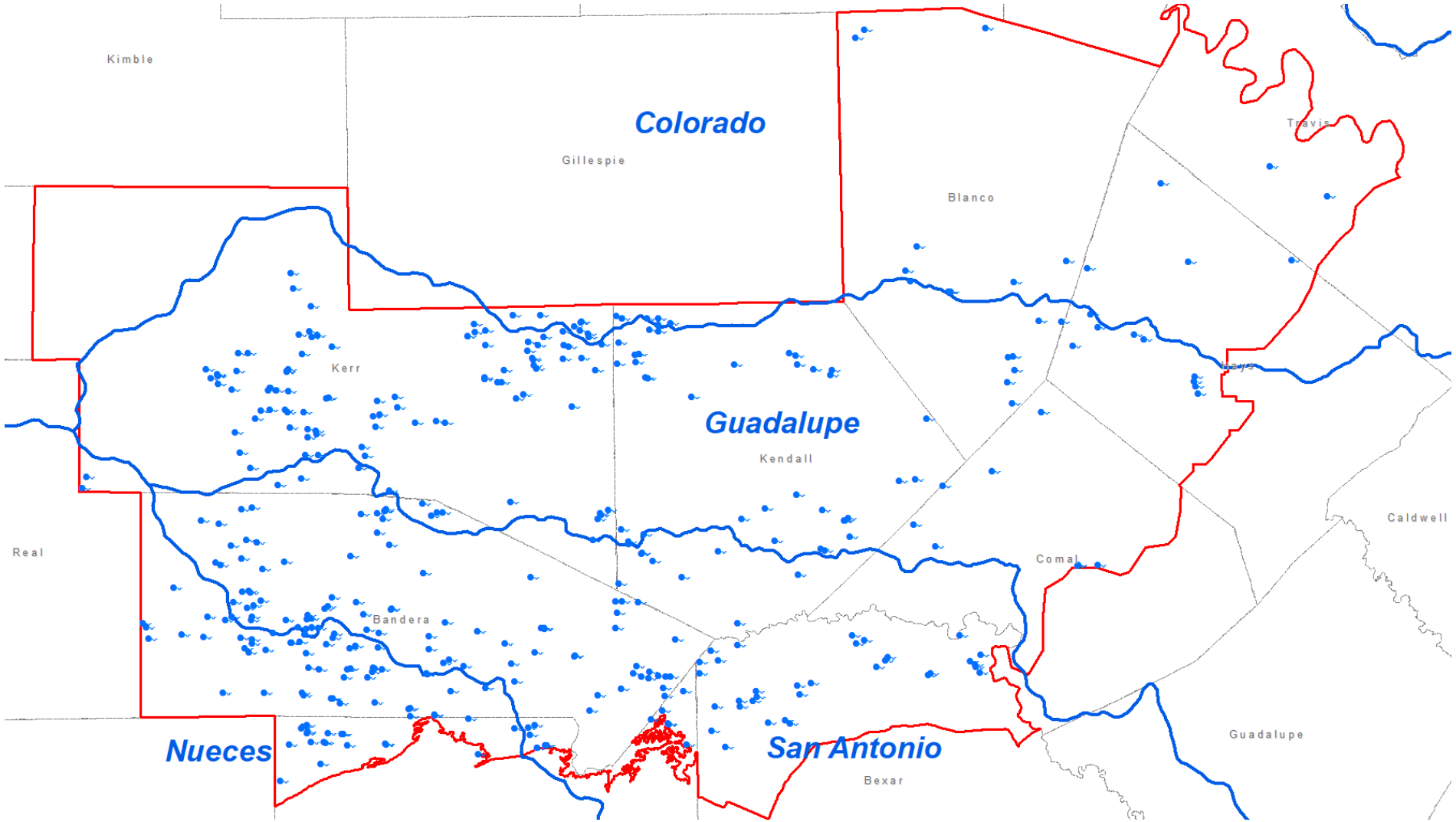
4th Factor (Section 36.108(d)) "Other Environmental Impacts"

- Estimated Annual Discharge from Aquifer to Springs and any Surface Waterbody

Groundwater Conservation District	Hickory Aquifer (acre-feet/year)	Ellenburger-San Saba Aquifer (acre-feet/year)	Marble Falls Aquifer (acre-feet/year)
Bandera County River Authority and Groundwater District	-	-	-
Blanco-Pedernales GCD	15,721	24,178	7,745
Cow Creek GCD	0	0	-
Comal Trinity GCD	-	-	-
Headwaters GCD	0	0	-
Hays Trinity GCD	0	-	-
Medina County GCD	-	-	-
Southwestern Travis GCD	0	-	-
Trinity Glen Rose GCD	-	-	-

Sources: GAM Run 23-017, GAM Run 22-012, GAM Run 22-010, GAM Run 21-003, GAM Run 20-003, GAM Run 19-026, GAM Run 19-027, GAM Run 19-025, GAM Run 19-011

Map of Springs and River Basins in GMA 9



Data Source: National Hydrographs Dataset

4th Factor (Section 36.108(d)) "Other Environmental Impacts"

Highlighted GMA 9 GCD Management Plan Environmental-Related Objectives

- Actively participate in Texas Clean Rivers Program. (Bandera County River Authority & Groundwater District)
- Evaluate effectiveness of rules to discourage use of Edwards-Trinity (Plateau) and Upper Glen Rose (Upper Trinity) aquifers and prevent leakage to other aquifers to help extend period of springs and seeps from aquifer outcrop. (Blanco-Pedernales GCD)
- Address potential natural resources issues that may arise from the use of groundwater for mining (quarries) and industrial use. (Comal Trinity GCD)
- Maintain ongoing District spring flow monitoring program. (Cow Creek GCD)
- Prohibit contamination/pollution of the aquifers in the district from other natural resources being produced. (Headwaters GCD)

4th Factor (Section 36.108(d)) "Other Environmental Impacts"

Highlighted GMA 9 GCD Management Plan Environmental-Related Objectives

- Sustainable management of the Trinity Aquifer contribution to stream leakage and stream/spring baseflow during a repeat of the drought of record, and in critical depletion areas, a rate of stream/spring baseflow that maintains a sound ecological environment. The District will plan, develop, and participate in studies related to groundwater quality, availability, and the environment. This will include working jointly with universities, government agencies, private groups, and the public to collect and interpret data from area springs and streams. (Hays Trinity GCD)

- Develop and maintain a Well Monitoring Program, consisting primarily of measuring static water levels of particular wells. (Medina County GCD)

- Extend period of spring and seep flow during times of drought or limited rainfall, evaluate effectiveness of District Rules to discourage use of the Upper Trinity Aquifer and prevent leakage from aquifer into other aquifers, and consider how District may increase current effectiveness. (Southwestern Travis County GCD)

- Collaborate and/or partner with appropriate agencies, consultants, and research groups and document in-house efforts to advance projects and research that might impact the use and availability of groundwater. Encourage the plugging of abandoned and nuisance groundwater wells. The District or its authorized agents will document and conduct inspections of groundwater wells within the District's boundaries to encourage proper construction, plugging and maintenance of groundwater wells. (Trinity Glen Rose GCD)

7th Factor (Section 36.108(d))- "Private Property Rights"

- The districts shall consider:

  "the impact on the interests and rights in private property, including ownership and the rights of management area landowners and their lessees and assigns in groundwater as recognized under Section 36.002"

- The Texas Legislature has defined ownership of groundwater, recognizing that a landowner owns the groundwater below the surface of the landowner's land as a real property right. This has been affirmed by the Texas Supreme Court.
- The groundwater ownership and rights…entitle the landowner, including the landowner's lessees, heirs, or assigns, to drill for and produce the groundwater below the surface of real property…without causing waste or malicious drainage of other property or negligently causing subsidence and, have any other right recognized under common law.

7th Factor (Section 36.108(d))- "Private Property Rights"

- The groundwater ownership and rights…do not: entitle a landowner, including a landowner's lessees, heirs, or assigns to the right to capture a specific amount of groundwater below the surface of that landowner's land; or affect the existence of common law defenses or other defenses to liability under the rule of capture.
- Nothing in the code shall be construed as granting the authority to deprive or divest a landowner, including a landowner's lessees, heirs, or assigns of the groundwater ownership and rights described by this section.

7th Factor (Section 36.108(d))- "Private Property Rights"

Chapter 36.002 does not:

- Prohibit a district from limiting or prohibiting the drilling of a well by a landowner for failure or inability to comply with minimum well spacing or tract size requirements adopted by the district.
- Affect the ability of a district to regulate groundwater production as authorized under Sections 36.113, 36.116, 36.122, or otherwise under this chapter or a special law governing a district.
- Require that a rule adopted by a district to allocate to each landowner a proportionate share of available groundwater for production from the aquifer based on the number of acres owned by the landowner.

7th Factor (Section 36.108(d))- "Private Property Rights"

Previous planning cycle considerations:

- Any management strategy could have an impact of private property rights.
- Trinity Aquifer DFC was generally based on actual pumping vs. permitted pumping.
- Short-term fluctuations are recognized and evaluated through monitoring.
- DFC are generally longer-term and larger scale descriptions of aquifer status in the future.
- DFCs impacts depend upon on how GCDs incorporate DFCs/MAGs into management plans and rules.
- DFCs established to accommodate groundwater users – to strike a "balance."
- DFCs offer positive implications - set regional long-term goals to manage and preserve groundwater resources for benefit of all.

7th Factor (Section 36.108(d))- "Private Property Rights"

Other GMA and GCD Considerations

- DFC process is "iterative" – Through annual and DFC joint planning, GCDs discuss new or emerging issues that may involve re-evaluating, revising, and/or reconsidering DFCs.
- GCDs actively engaged in management activities and programs to carry out statutory mission and manage aquifers through strategies that address aquifer management issues to identify ways to improve and share resources.
- Chapter 36 provides flexibility to develop locally-responsive management programs and management strategies and incentives - management zones, water conservation, reuse and rainwater harvesting - further reduce demand, help achieve DFCs, and consider potential impacts.

7th Factor (Section 36.108(d))- "Private Property Rights"

- Potential private property rights impacts considered in management plan and rule updates, and permit decisions:
  - Impacts on property rights of landowners and their lessees.
  - Expectations of existing and future well owners to recover reasonable investments in their water wells and properties.
  - Availability of groundwater for properties overlying the aquifer.
  - Availability water from alternative water supplies.
  - The issue of takings is another topic.
  - All interests, both conservation and production, have property rights. What benefits one type of property right may negatively impacts another.
  - Rules adopted by GCDs based on meeting DFCs may have impacts on property rights.

Thank you
Questions?

AGS
Advanced Groundwater Solutions, LLC
www.advancedgw.com