

DFC Runs for GAM Runs S-10, S-11, S-12, and S-13 for Sparta, Queen City, and Carrizo-Wilcox Aquifers

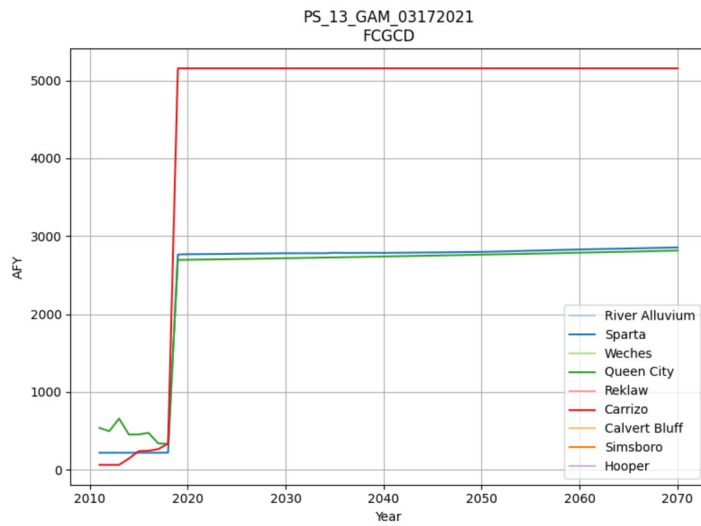
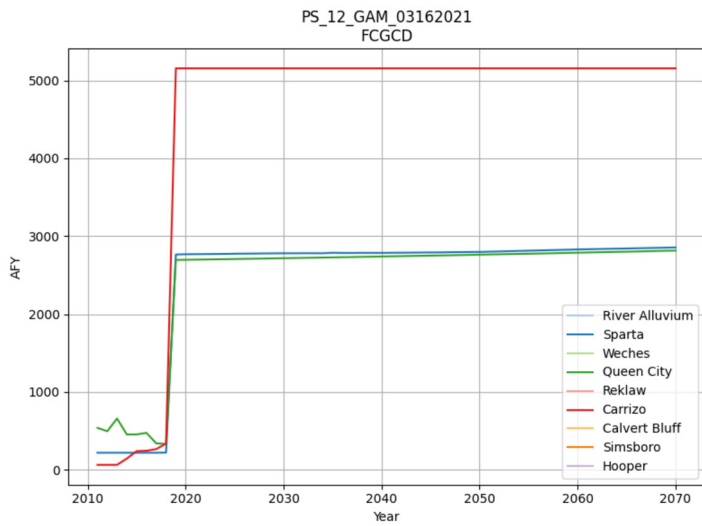
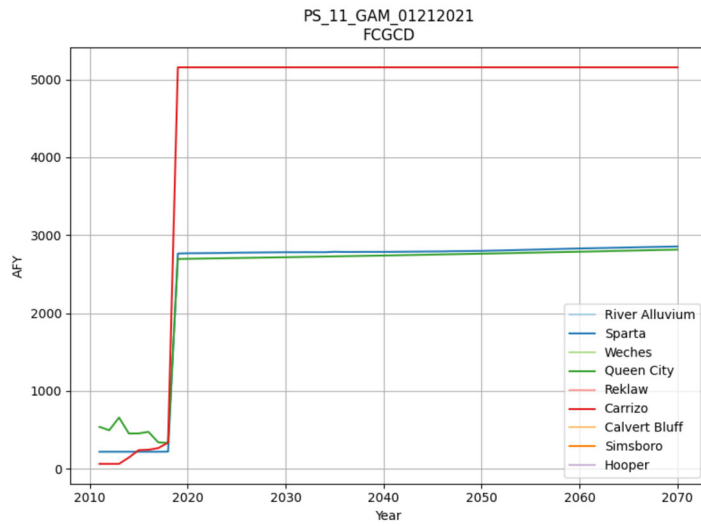
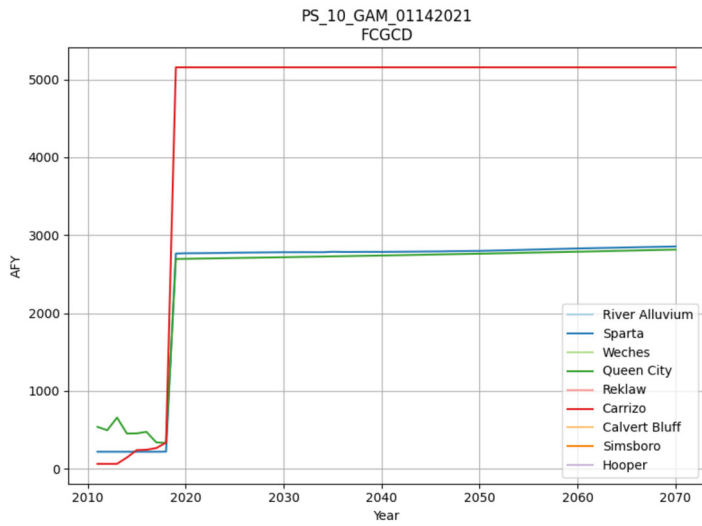
Presented by Ross Kushnereit – INTERA Inc.

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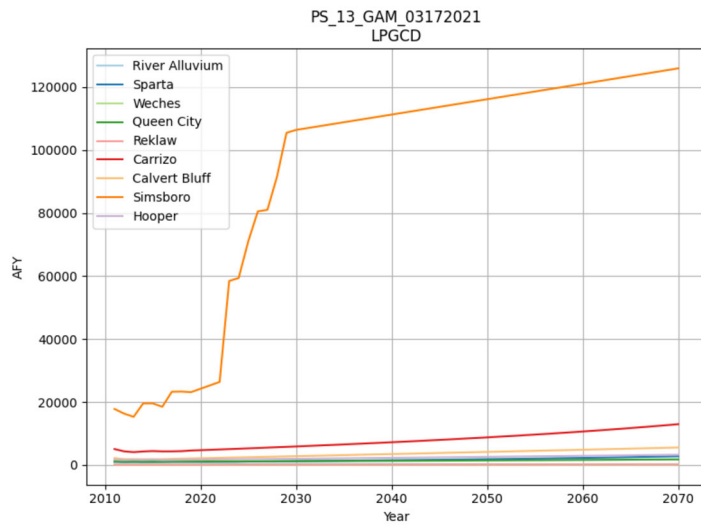
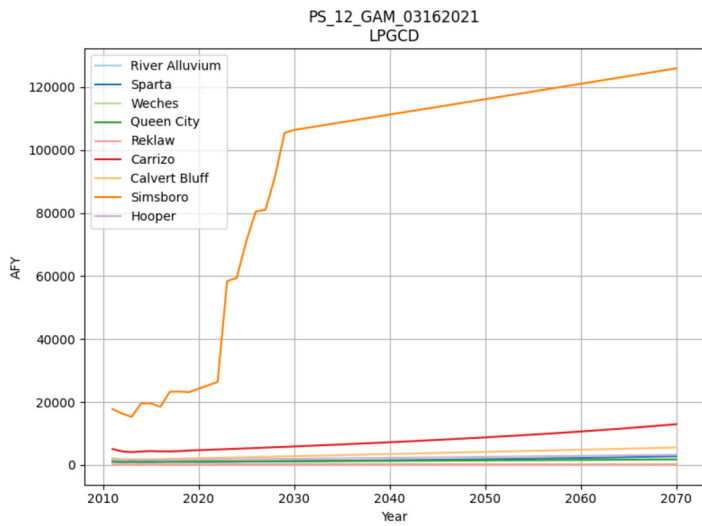
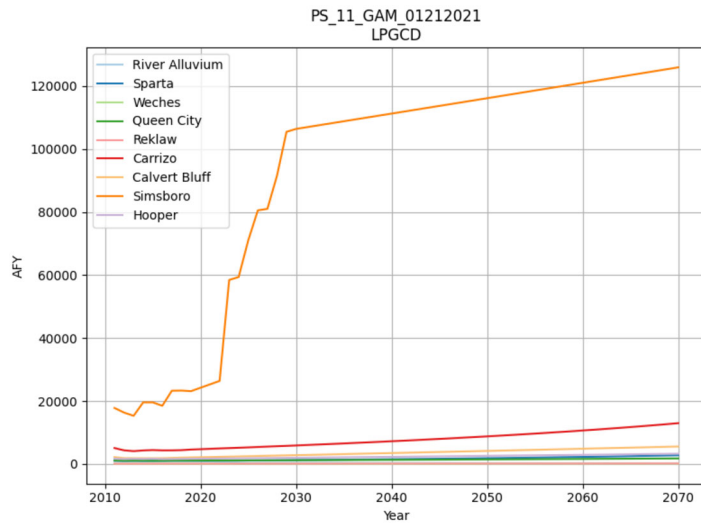
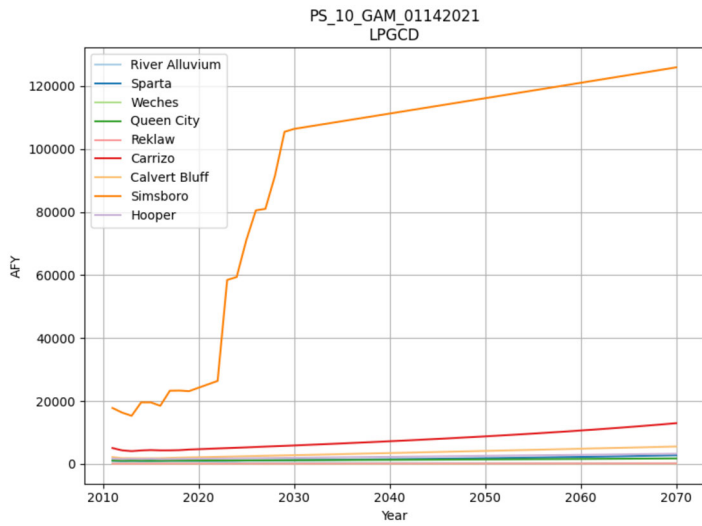
Four predicative model runs

- PS-10
 - PS-10 is PS-7 with increased pumping in the Sparta and Queen City to meet a drawdown of 30 ft by 2070 in POSGCD, pumping in the Carrizo was decreased to 12,200 AFY from 2021 to 2070 in POSGCD, and pumping was decreased slightly in the Simboro aquifer (see GMA 12 presentation on Feb. 12, 2021 for details)
- PS-11
 - Same as PS-7 but replaced Carrizo pumping with PS-10's Carrizo Pumping
- PS-12
 - Same as for S-11 except for two percent increase in pumping from the Simsboro Aquifer over the planning cycle in BVGCD
- PS-13
 - Same as PS-12 but replaced Carrizo pumping with PS-10's Carrizo Pumping

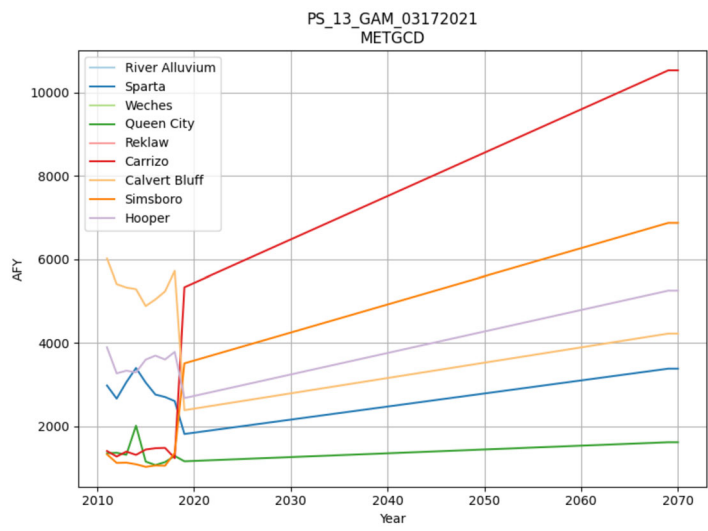
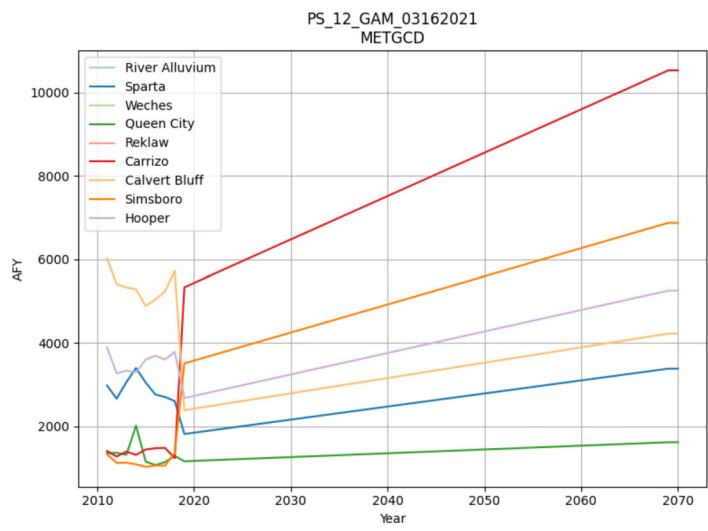
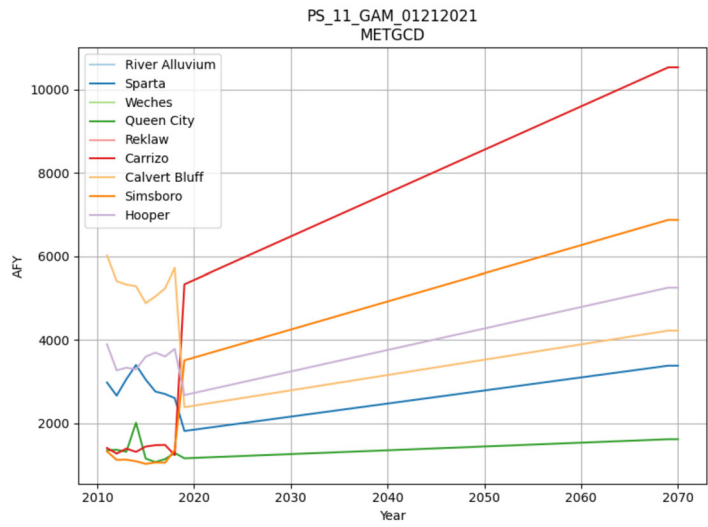
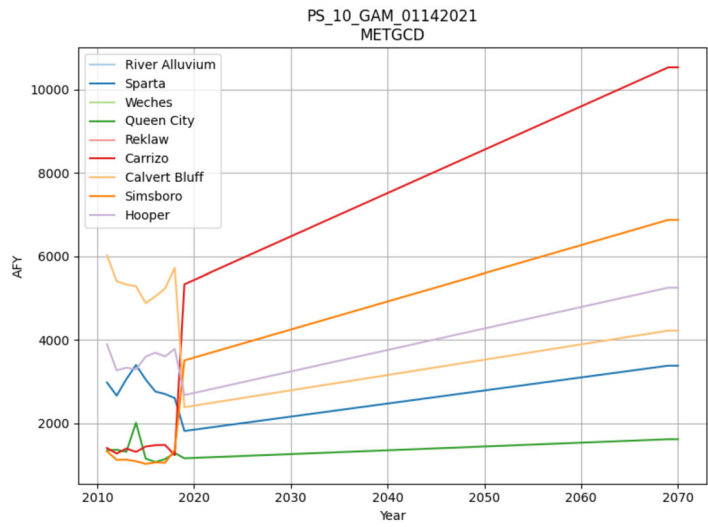
FCGCD Pumping



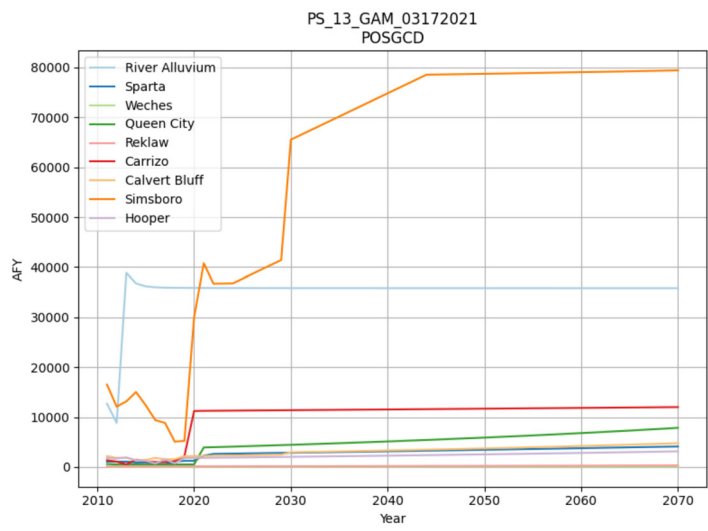
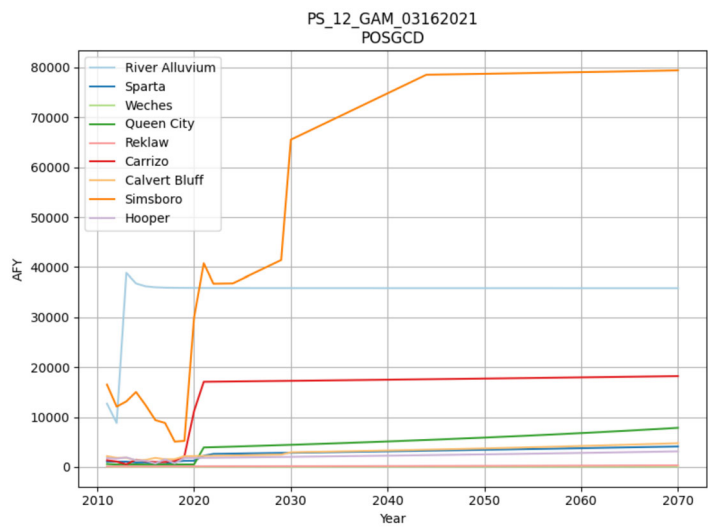
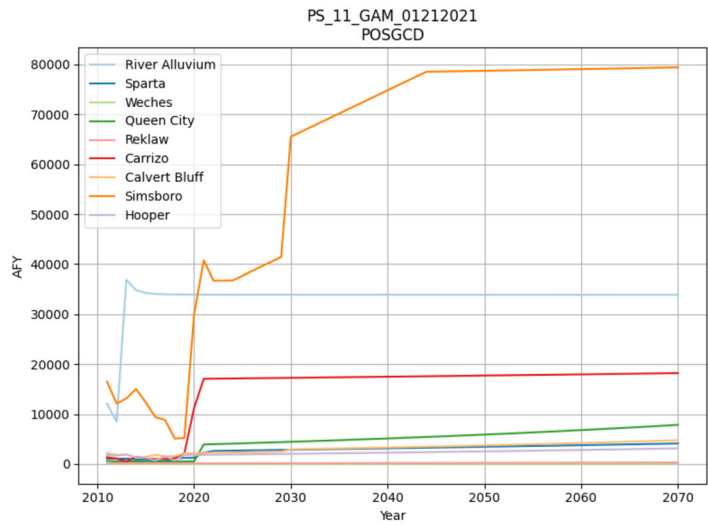
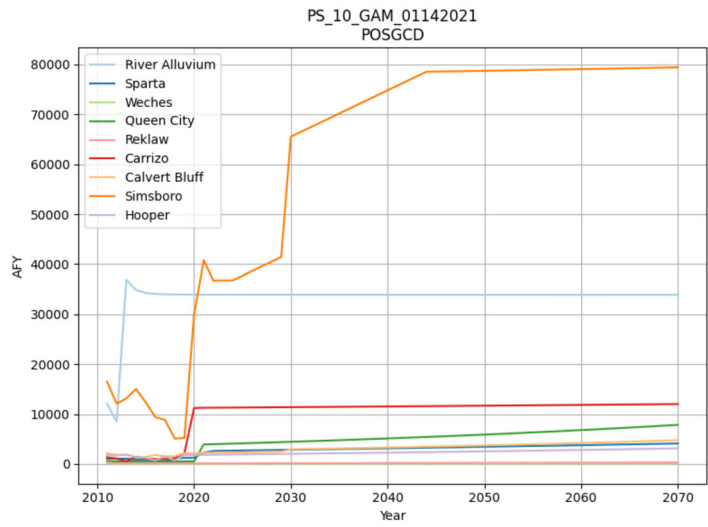
LPGCD Pumping



METGCD Pumping

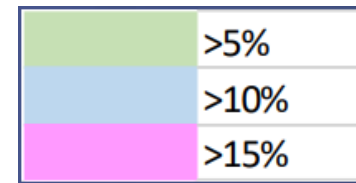


POSGCD Pumping



DFCs 2010-2070

Percentage Change
Relative to S-7



PS7						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	20	26	139	158	322	178
BrazosValley	46	39	76	98	219	155
PostOak	17	18	173	184	352	223
Mid-East	25	21	49	60	82	74
Fayette	40	65	123			

PS10						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	21.4	26.3	123.0	148.2	308.4	171.3
BrazosValley	45.8	38.6	69.9	93.3	211.7	149.7
PostOak	31.3	29.2	144.7	168.8	333.1	212.0
Mid-East	24.9	20.5	48.2	58.9	80.5	72.7
Fayette	39.4	63.3	116.0			

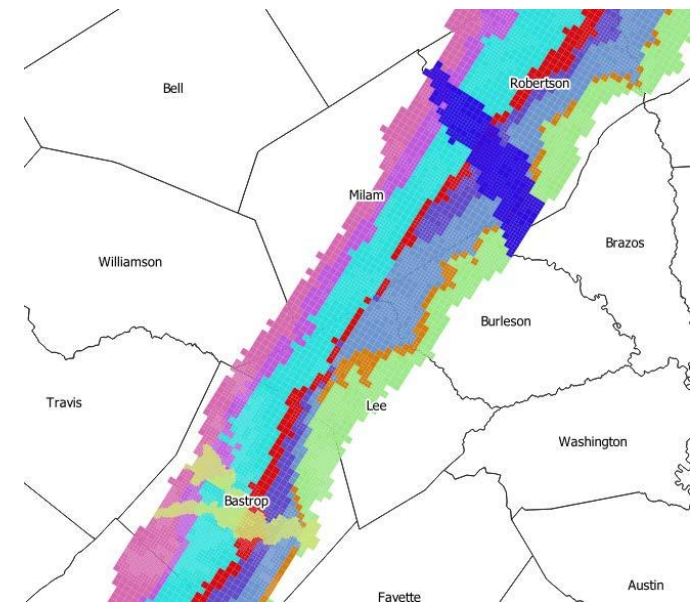
PS11						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	22.2	27.5	137.3	154.2	310.2	172.2
BrazosValley	47.2	40.3	74.9	95.4	212.7	150.4
PostOak	32.1	30.5	171.5	178.2	335.1	213.1
Mid-East	25.3	20.9	48.8	59.3	80.8	72.9
Fayette	40.1	65.0	122.0			

PS12						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	22.2	27.5	137.4	154.5	310.8	172.7
BrazosValley	47.3	40.3	75.1	95.9	213.3	151.1
PostOak	32.1	30.6	171.8	178.8	336.1	214.1
Mid-East	25.3	20.9	49.0	59.5	81.0	73.3
Fayette	40.1	65.0	122.1			

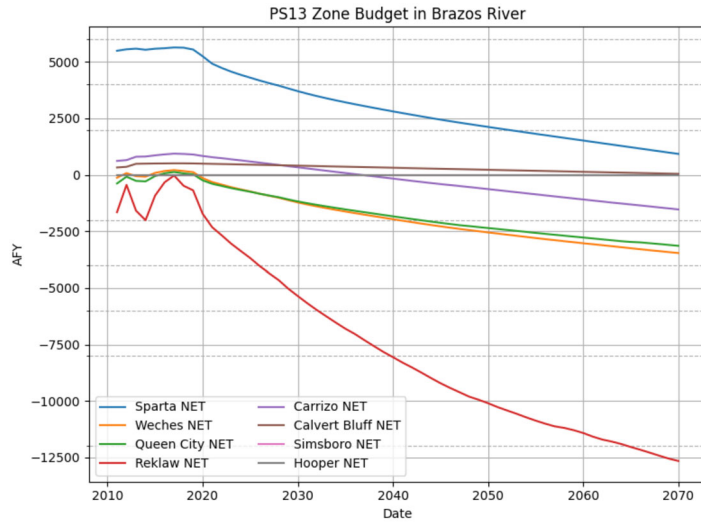
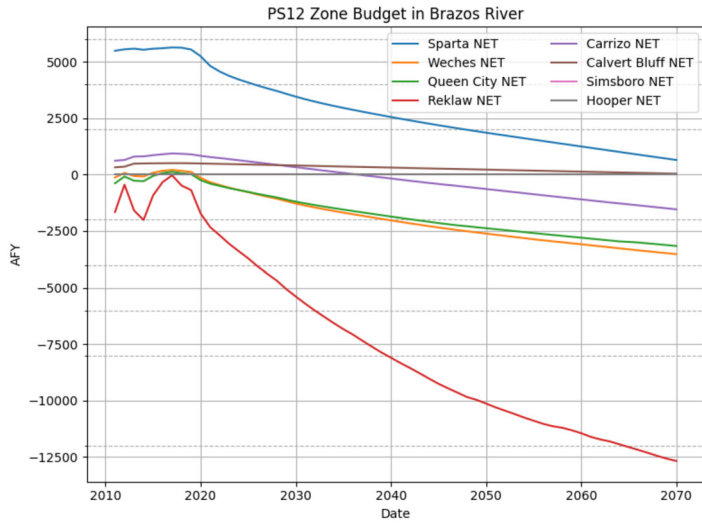
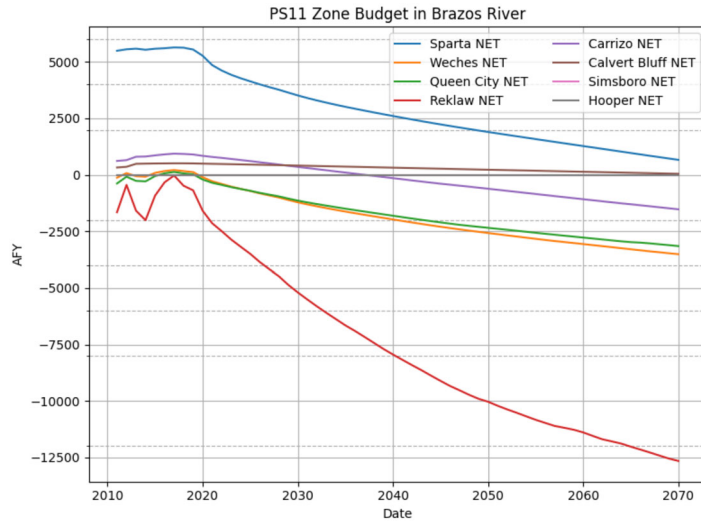
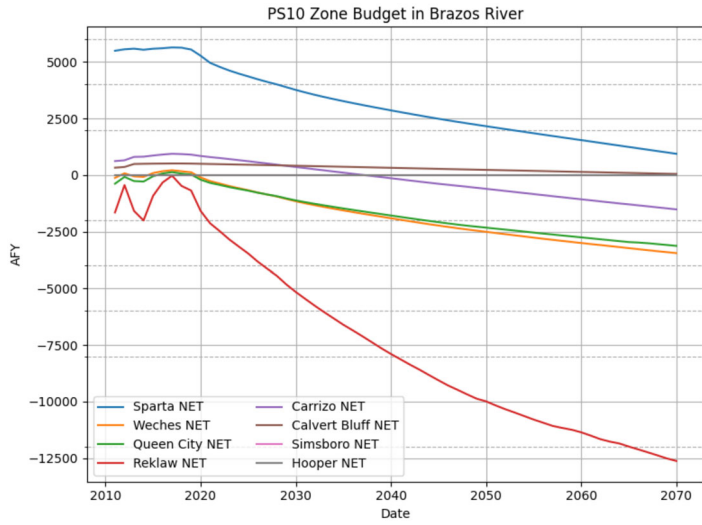
PS13						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	21.5	26.3	123.2	148.6	308.9	171.8
BrazosValley	45.8	38.7	70.1	93.7	212.3	150.4
PostOak	31.3	29.2	145.1	169.5	334.1	212.9
Mid-East	25.0	20.6	48.3	59.1	80.7	73.0
Fayette	39.4	63.4	116.1			

Net Flow to River alluvium

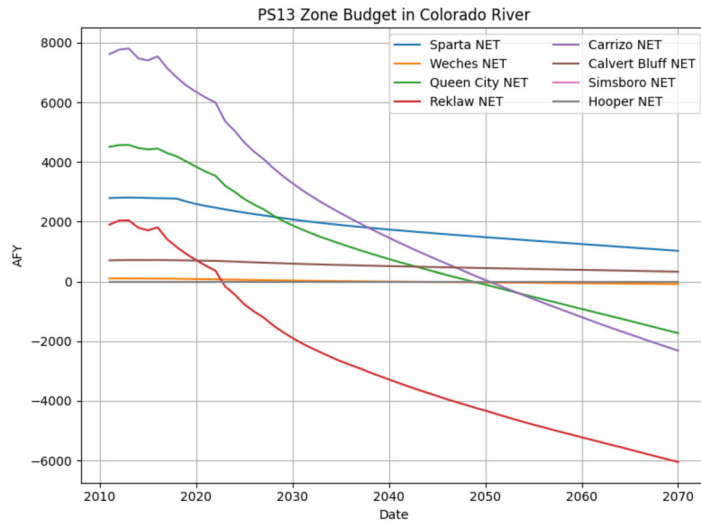
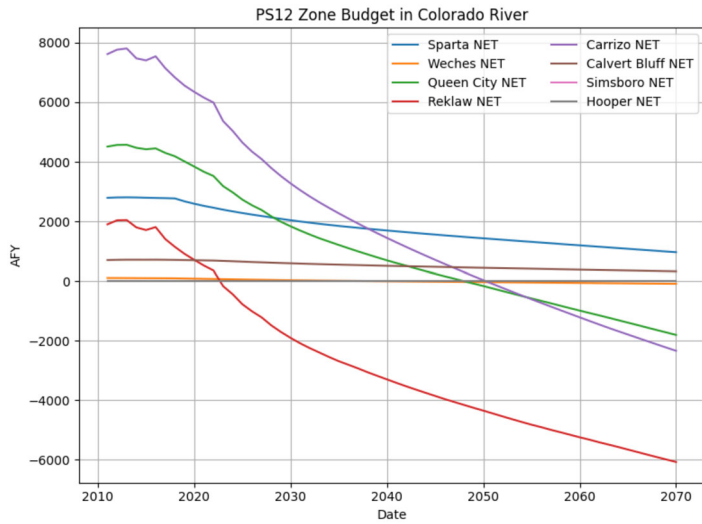
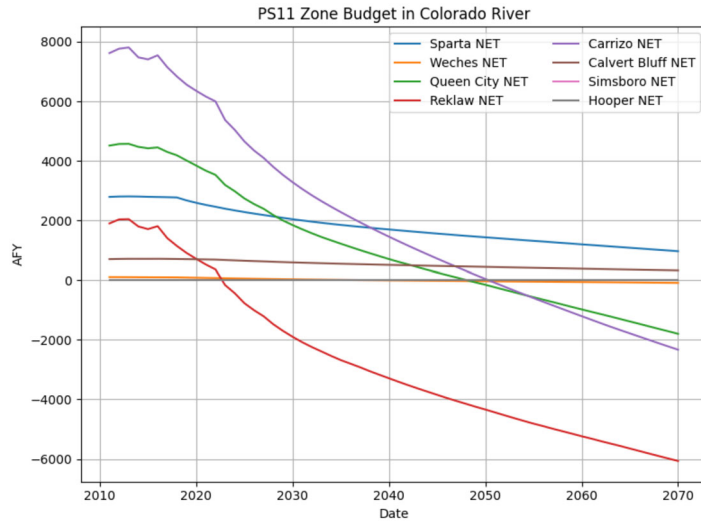
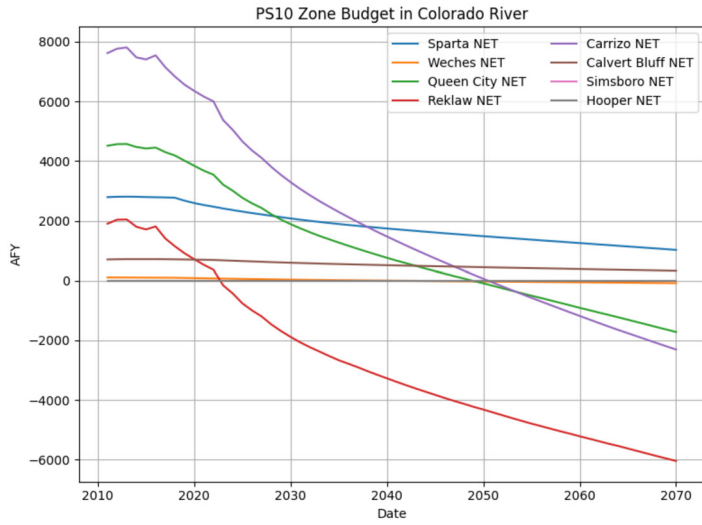
- Flow in + Flow out = Flow net
 - Flow from each formation to river alluvium



Net Flow to Brazos River Alluvium



Net Flow to Colorado River Alluvium



Example of River Alluvium Budget

S-10 - 2070									
Year	Formation	River	In Flow (afy)	Out Flow (afy)	Net Flow (afy)	River	In Flow (afy)	Out Flow (afy)	Net Flow (afy)
2070	Sparta	Brazos River	3016.2	-2076.6	939.5	Colorado River	1890.8	-868.1	1022.7
2070	Weches		15.6	-3467.7	-3452.2		42.9	-126.6	-83.6
2070	Queen City		13.9	-3146.4	-3132.5		1307.7	-3027.8	-1720.1
2070	Reklaw		153.5	-12782.5	-12629.0		706.9	-6752.3	-6045.4
2070	Carrizo		321.2	-1839.6	-1518.4		4913.9	-7222.3	-2308.5
2070	Calvert Bluff		311.4	-262.5	48.9		913.4	-590.2	323.1
2070	Simsboro								
2070	Hooper								

Onedrive

- Access to the model files here:

- https://interainc-my.sharepoint.com/:f:/g/personal/rkushnereit_intera_com/EhzdgL0d85RCmiqbnH4v2jkBUrJC6vg0zRkFzYpB1zPxrg?e=qCJ1Sb

DFCs 2010-2030

PS10						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	10.6	12.6	66.7	68.9	183.5	68.7
BrazosValley	13.9	11.8	26.6	30.7	75.5	44.7
PostOak	14.8	13.3	82.8	72.2	160.3	73.8
Mid-East	8.0	7.6	23.7	26.9	37.3	29.8
Fayette	26.8	41.0	68.1	56.0	126.7	42.5

PS11						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	11.1	13.4	80.2	73.8	184.8	69.1
BrazosValley	15.1	13.1	31.0	32.2	76.1	45.0
PostOak	15.4	14.3	107.9	79.8	161.7	74.4
Mid-East	8.2	7.8	24.2	27.1	37.4	29.9
Fayette	27.3	42.3	73.4	58.0	128.1	42.9

PS12						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	11.1	13.5	80.5	74.6	186.9	70.1
BrazosValley	15.2	13.2	31.6	34.0	82.4	47.8
PostOak	15.4	14.3	108.7	81.7	167.1	77.0
Mid-East	8.3	7.9	24.5	27.7	38.8	30.7
Fayette	27.3	42.4	73.6	58.6	130.4	43.4

PS13						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	10.6	12.6	67.1	69.7	185.6	69.6
BrazosValley	14.0	12.0	27.2	32.5	81.8	47.4
PostOak	14.8	13.3	83.6	74.1	165.7	76.4
Mid-East	8.0	7.7	24.1	27.5	38.6	30.6
Fayette	26.8	41.1	68.4	56.6	129.0	43.1

DFCs 2010-2040

PS10						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	13.8	16.8	86.6	101.8	236.3	112.5
BrazosValley	22.8	19.5	40.4	52.0	120.8	80.2
PostOak	19.5	18.0	105.5	112.0	232.4	129.7
Mid-East	12.9	11.5	31.7	37.7	52.2	43.5
Fayette	31.0	48.4	84.4	91.5	179.7	80.5

PS11						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	14.4	17.9	100.4	107.3	237.8	113.1
BrazosValley	24.1	20.9	45.1	53.9	121.6	80.7
PostOak	20.2	19.3	131.2	120.5	234.0	130.5
Mid-East	13.2	11.8	32.2	38.1	52.4	43.7
Fayette	31.6	49.9	90.0	94.4	181.4	81.1

PS12						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	14.5	17.9	100.8	108.0	239.6	114.2
BrazosValley	24.2	21.1	45.7	55.5	126.7	83.3
PostOak	20.3	19.3	131.9	122.3	238.4	133.1
Mid-East	13.3	11.9	32.6	38.7	53.6	44.5
Fayette	31.6	50.0	90.3	95.1	183.5	81.9

PS13						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	13.8	16.9	87.0	102.5	238.1	113.5
BrazosValley	22.9	19.6	41.0	53.6	125.9	82.8
PostOak	19.5	18.1	106.3	113.8	236.8	132.2
Mid-East	13.0	11.7	32.0	38.4	53.3	44.4
Fayette	31.0	48.5	84.7	92.3	181.7	81.3

DFCs 2010-2050

PS10						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	16.4	20.1	100.2	120.9	267.0	137.7
BrazosValley	30.8	26.2	51.3	67.9	155.1	107.4
PostOak	23.6	22.0	120.7	136.3	275.7	164.7
Mid-East	17.2	14.8	37.9	45.9	63.1	54.7
Fayette	34.0	53.7	96.0	113.3	208.5	105.6

PS11						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	17.1	21.3	114.2	126.6	268.7	138.4
BrazosValley	32.2	27.8	56.0	69.9	156.0	108.0
PostOak	24.4	23.2	146.7	145.2	277.5	165.7
Mid-East	17.6	15.1	38.5	46.3	63.4	54.9
Fayette	34.6	55.3	101.8	116.5	210.5	106.3

PS12						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	17.1	21.3	114.5	127.3	270.1	139.3
BrazosValley	32.3	27.9	56.5	71.2	159.6	110.1
PostOak	24.4	23.3	147.3	146.7	280.9	167.9
Mid-East	17.7	15.2	38.7	46.8	64.2	55.6
Fayette	34.7	55.4	102.0	117.2	212.1	107.2

PS13						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	16.4	20.2	100.5	121.6	268.4	138.6
BrazosValley	30.9	26.4	51.7	69.2	158.7	109.5
PostOak	23.6	22.0	121.4	137.8	279.1	166.9
Mid-East	17.3	14.9	38.1	46.4	63.9	55.4
Fayette	34.0	53.8	96.2	114.0	210.1	106.4

DFCs 2010-2060

PS10						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	18.9	23.2	111.7	135.2	288.4	155.7
BrazosValley	38.4	32.5	60.7	81.0	183.8	129.4
PostOak	27.5	25.6	133.1	153.5	305.2	189.8
Mid-East	21.1	17.7	43.2	52.7	72.0	64.1
Fayette	36.7	58.6	106.1	129.3	228.1	124.1

PS11						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	19.6	24.4	125.9	141.1	290.1	156.6
BrazosValley	39.8	34.1	65.6	83.0	184.8	130.1
PostOak	28.3	27.0	159.5	162.7	307.1	190.9
Mid-East	21.5	18.1	43.8	53.1	72.3	64.3
Fayette	37.4	60.2	112.0	132.7	230.2	125.0

PS12						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	19.6	24.4	126.1	141.5	291.1	157.3
BrazosValley	39.9	34.2	66.0	83.9	186.9	131.5
PostOak	28.3	27.0	160.0	163.8	309.3	192.5
Mid-East	21.6	18.2	44.0	53.4	72.9	64.9
Fayette	37.5	60.3	112.2	133.3	231.3	125.7

PS13						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	18.9	23.2	112.0	135.7	289.4	156.5
BrazosValley	38.5	32.6	61.1	81.8	185.9	130.9
PostOak	27.5	25.7	133.6	154.6	307.4	191.4
Mid-East	21.2	17.8	43.4	53.1	72.6	64.7
Fayette	36.8	58.6	106.3	129.9	229.3	124.9

DFCs 2010-2070

PS10						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	21.4	26.3	123.0	148.2	308.4	171.3
BrazosValley	45.8	38.6	69.9	93.3	211.7	149.7
PostOak	31.3	29.2	144.7	168.8	333.1	212.0
Mid-East	24.9	20.5	48.2	58.9	80.5	72.7
Fayette	39.4	63.3	116.0	143.2	246.2	139.5

PS11						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	22.2	27.5	137.3	154.2	310.2	172.2
BrazosValley	47.2	40.3	74.9	95.4	212.7	150.4
PostOak	32.1	30.5	171.5	178.2	335.1	213.1
Mid-East	25.3	20.9	48.8	59.3	80.8	72.9
Fayette	40.1	65.0	122.0	146.8	248.3	140.5

PS12						
Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	22.2	27.5	137.4	154.5	310.8	172.7
BrazosValley	47.3	40.3	75.1	95.9	213.3	151.1
PostOak	32.1	30.6	171.8	178.8	336.1	214.1
Mid-East	25.3	20.9	49.0	59.5	81.0	73.3
Fayette	40.1	65.0	122.1	147.2	249.0	141.0

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Aquifer	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
LostPines	21.5	26.3	123.2	148.6	308.9	171.8
BrazosValley	45.8	38.7	70.1	93.7	212.3	150.4
PostOak	31.3	29.2	145.1	169.5	334.1	212.9
Mid-East	25.0	20.6	48.3	59.1	80.7	73.0
Fayette	39.4	63.4	116.1	143.6	246.8	140.1