Work Plan for Comparison of ESPAM2.0 with IWRRI's ESPAM1.1 Curtailment Scenario

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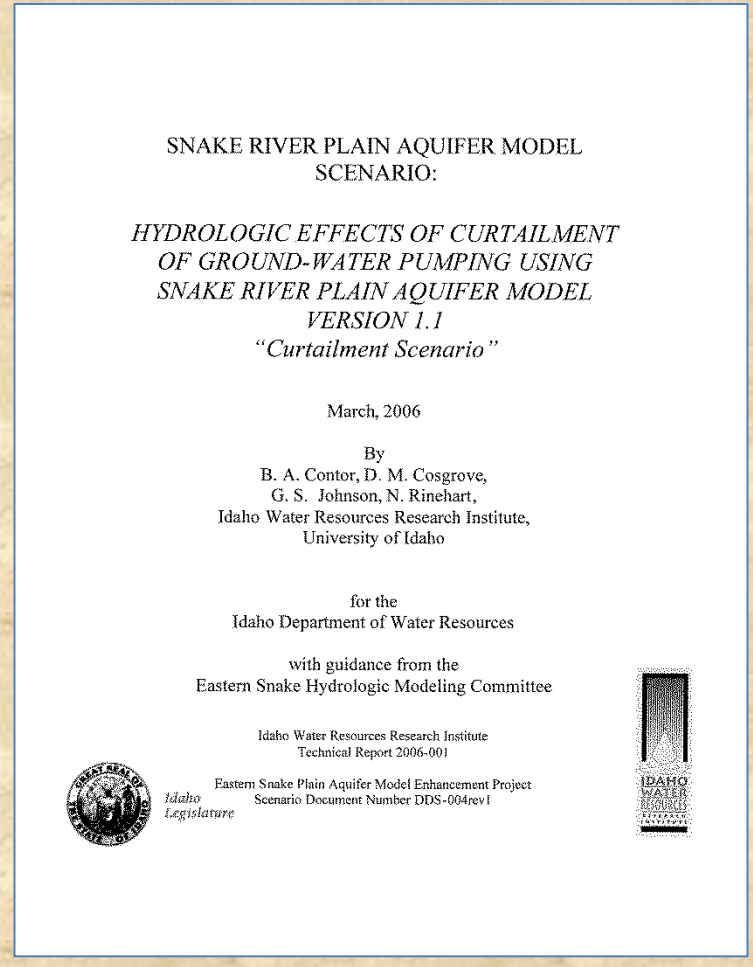
April 16, 2012

Review ESPAM1.1 Curtailment Scenario

- Contor, et al. (2006) available at http://www.if.uidaho.edu/~johnson/ifiwrri/projects.html#prj rpt
- Modeled curtailment of groundwater irrigation within model boundary junior to five selected priority dates
- No administrative boundaries were applied (no trim line, no area of common groundwater)



SNAKE RIVER PLAIN AQUIFER MODEL
SCENARIO:

HYDROLOGIC EFFECTS OF CURTAILMENT OF GROUND-WATER PUMPING USING SNAKE RIVER PLAIN AQUIFER MODEL VERSION 1.1
"Curtailment Scenario"

March, 2006

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for the
Idaho Department of Water Resources

with guidance from the
Eastern Snake Hydrologic Modeling Committee

Idaho Water Resources Research Institute
Technical Report 2006-001

Idaho Legislature

Eastern Snake Plain Aquifer Model Enhancement Project
Scenario Document Number DDS-004rev1

IDAHO WATER RESOURCES RESEARCH INSTITUTE

Review ESPAM1.1 Curtailment Scenario

- Numerical superposition version of EPSAM1.1
- Average precipitation from 1961-1990
- Average ET from 1980-2001

- Predictions
  - Steady state response to continuous curtailment
  - Transient response to continuous curtailment for 150 years
  - Transient response to a one-year curtailment

Review ESPAM1.1 Curtailment Scenario

Table 1. Predicted steady state reach accruals for each curtailment period (using ESPAM v1.1).

Cutoff Date	All Pumping		Post January 1, 1949		Post January 1, 1961		Post January 1, 1973		Post January 1, 1985	
Reach Name	Steady State Gain (cfs)	Time (yrs) to realize 90% of gain	Steady State Gain (cfs)	Time (yrs) to realize 90% of gain	Steady State Gain (cfs)	Time (yrs) to realize 90% of gain	Steady State Gain (cfs)	Time (yrs) to realize 90% of gain	Steady State Gain (cfs)	Time (yrs) to realize 90% of gain
Ashton to Rexburg	316	20	290	20	222	19	128	19	22	19
Heise to Shelley	211	18	195	18	141	17	78	17	15	17
Sum of Reaches Above Shelley	**526**		**484**		**363**		**206**		**37**	
Shelley to Near Blackfoot	406	30	368	30	240	28	132	25	26	28
Near Blackfoot to Neeley	1035	35	925	36	593	33	331	29	69	32
Neeley to Minidoka	158	62	134	65	84	61	46	55	10	60
Sum of Reaches Shelley to Milner	**1598**		**1427**		**917**		**509**		**105**	
Devil's Washbowl to Buhl	298	59	257	61	160	57	88	51	18	60
Buhl to Thousand Springs	137	49	122	50	81	43	47	37	8.0	51
Thousand Springs	89	48	79	48	54	42	31	35	5.6	47
Thousand Springs to Malad	10	45	9	46	6.4	38	3.7	32	0.74	42
Malad	77	50	68	51	47	43	29	35	5.5	44
Malad to Bancroft	5.8	38	5.2	38	3.8	34	2.4	31	0.59	36
Sum of Thousand Springs Reaches	**617**		**541**		**352**		**201**		**38**	
Total (cfs)	**2741**		**2453**		**1633**		**916**		**180**	
Total (acre-feet/year)	**1,984,659**		**1,775,637**		**1,182,086**		**663,362**		**130,506**	

Review ESPAM1.1 Curtailment Scenario

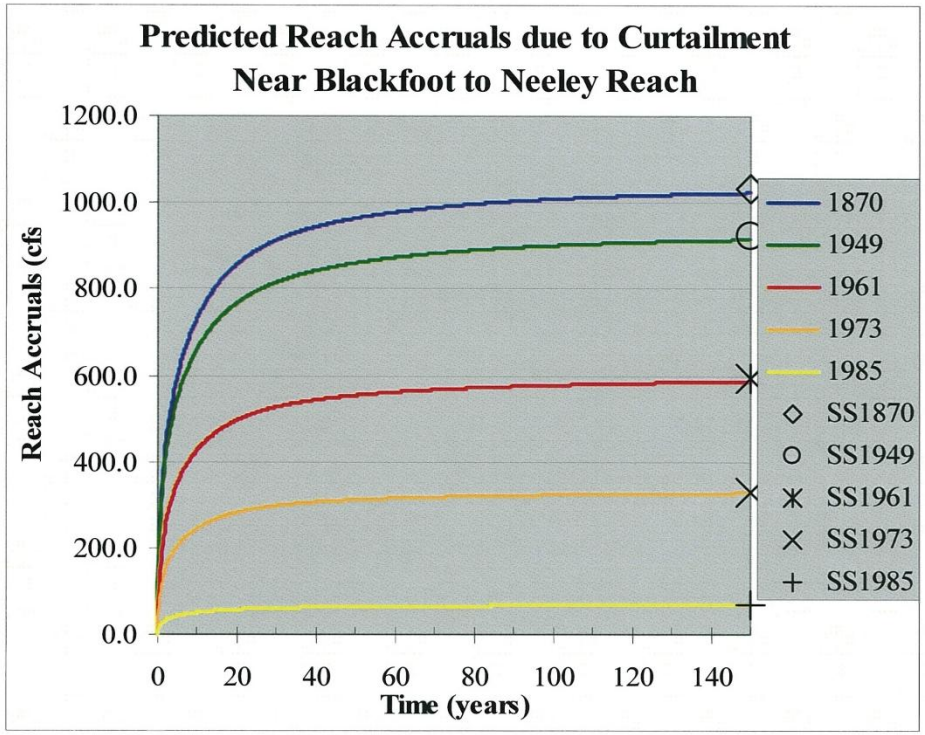


Figure 10. Predicted Reach Accruals due to Curtailment of Ground-Water Pumping for Near Blackfoot-Neeley Reach (generated using ESPAM v1.1).

Review ESPAM1.1 Curtailment Scenario

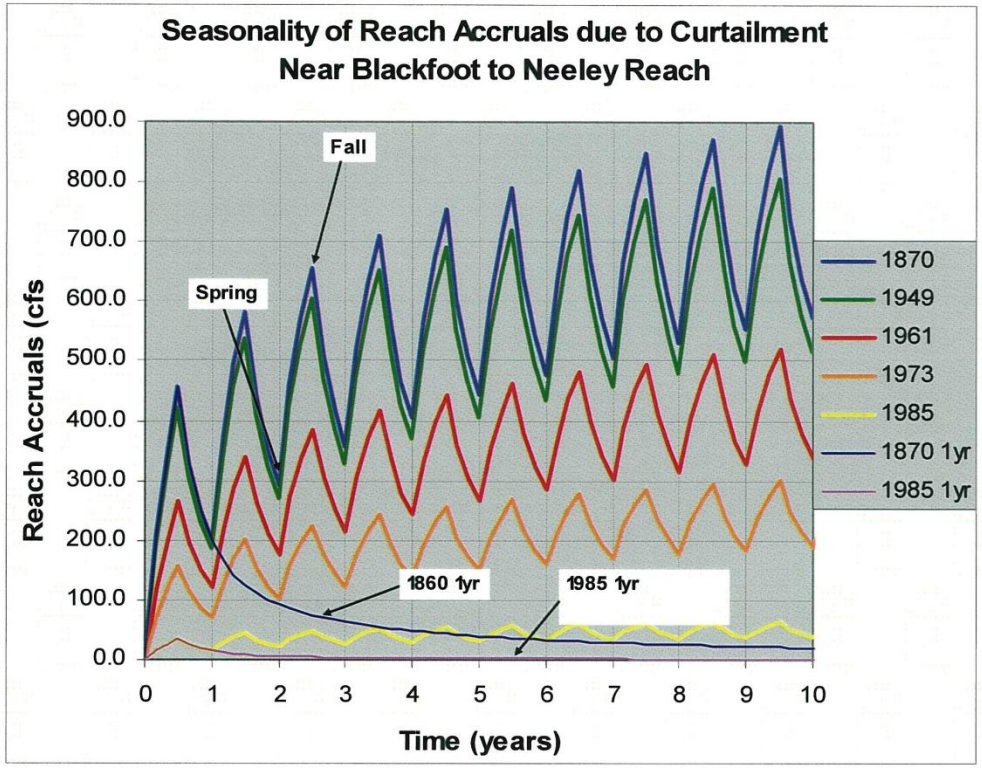


Figure 21. Seasonality of Reach Accruals due to Curtailment of Ground-Water Pumping for Near Blackfoot-Neeley Reach (generated using ESPAM v1.1).

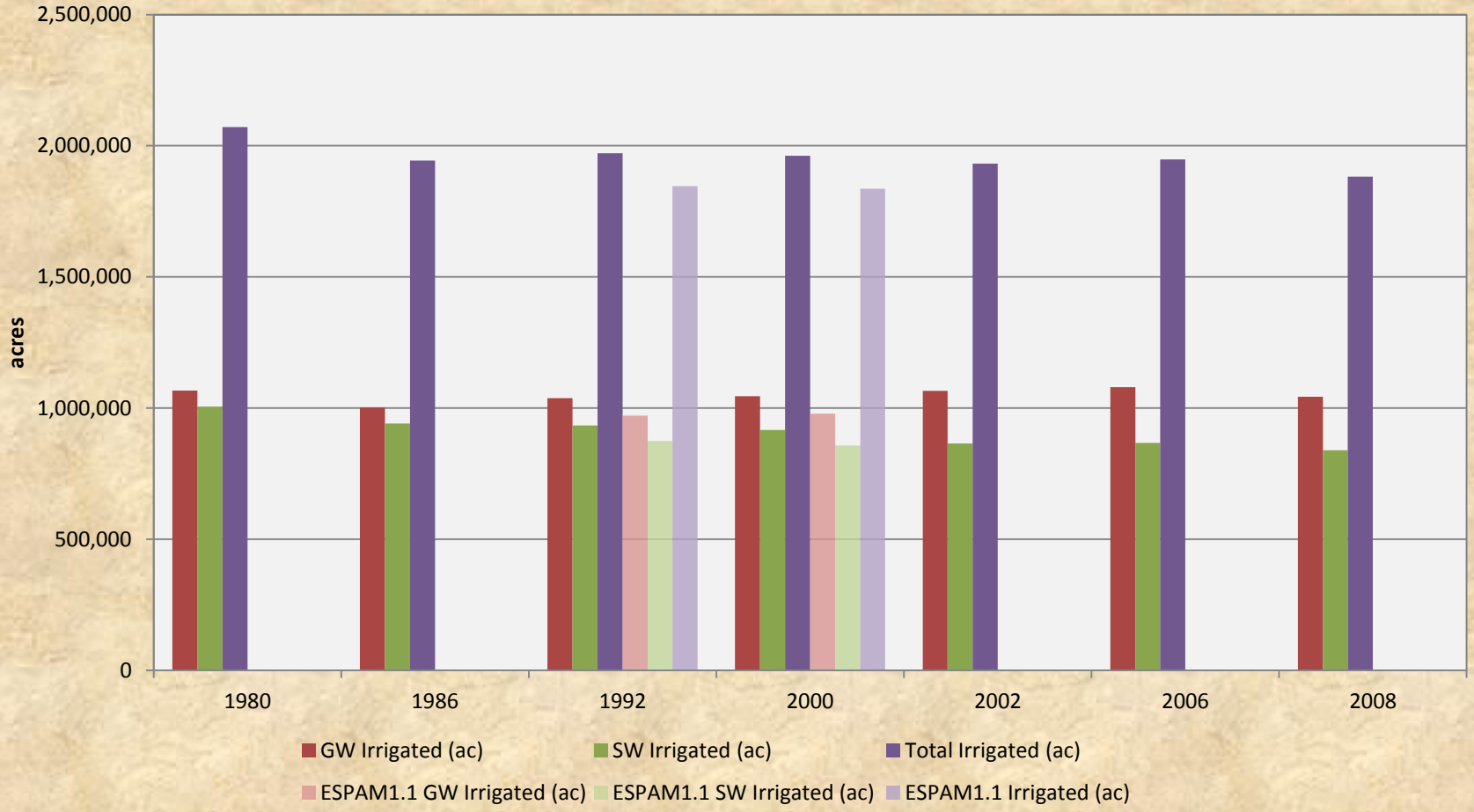
ESPAM2.0 Curtailment Scenario Work Plan

- Numerical superposition version of EPSAM2.0
- Run with well files from ESPAM1.1 scenarios
- Run again with well files created using ESPAM2.0 input data
  - 2012 POD file
  - 2008 irrigated lands
  - Average groundwater fraction raster
  - Average precipitation from Nov 1998 – Oct 2008
  - Average ET from Nov 1998 – Oct 2008

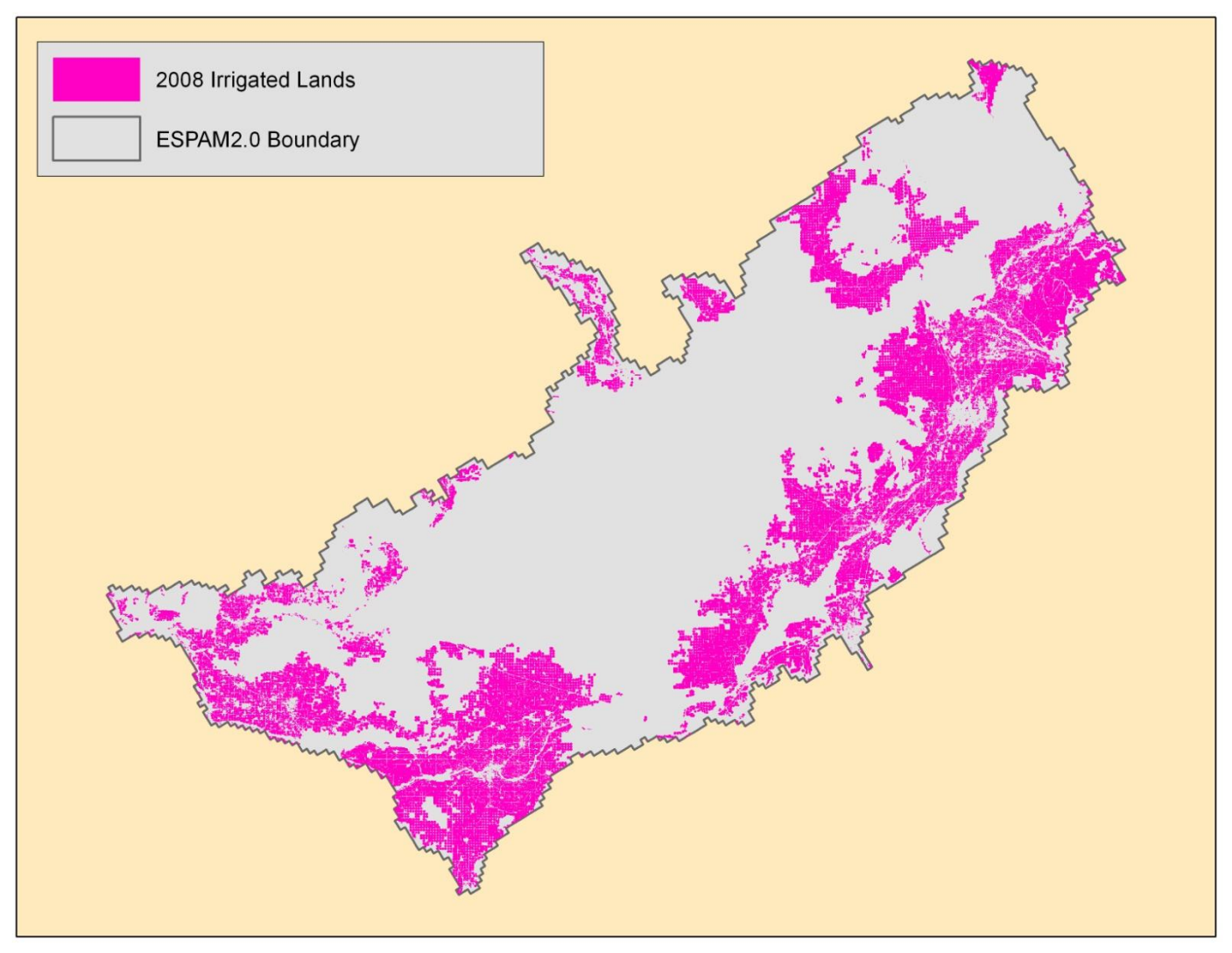
2012 POD File

- Allan Wylie presented 2012 POD file in our February meeting
- http://www.idwr.idaho.gov/Browse/WaterInfo/ESPAM/meetings/2012_ESHMC/02_27_2012/Wylie_2012%20POD%20File.pdf

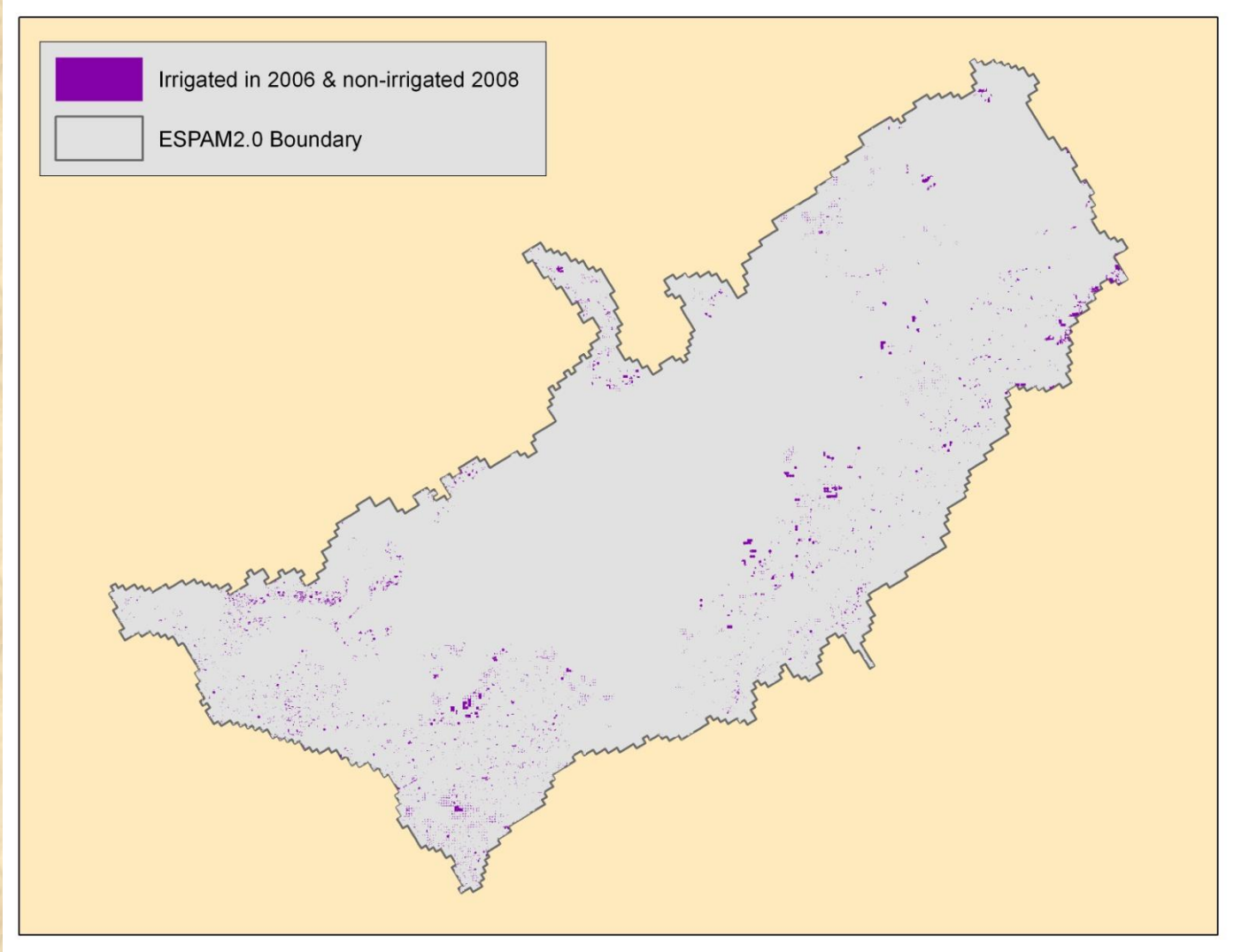
2008 Irrigated Lands



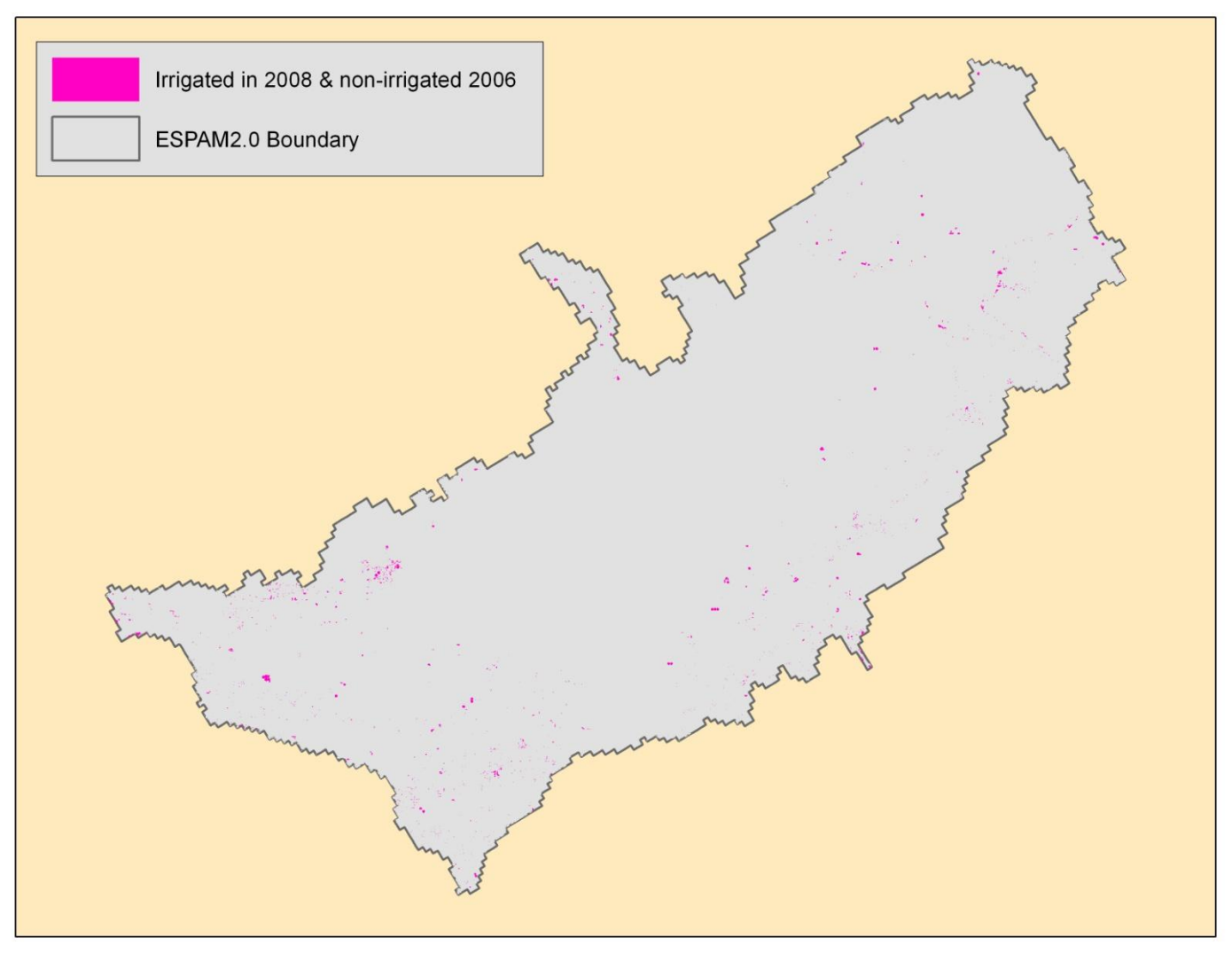
2008 Irrigated Lands



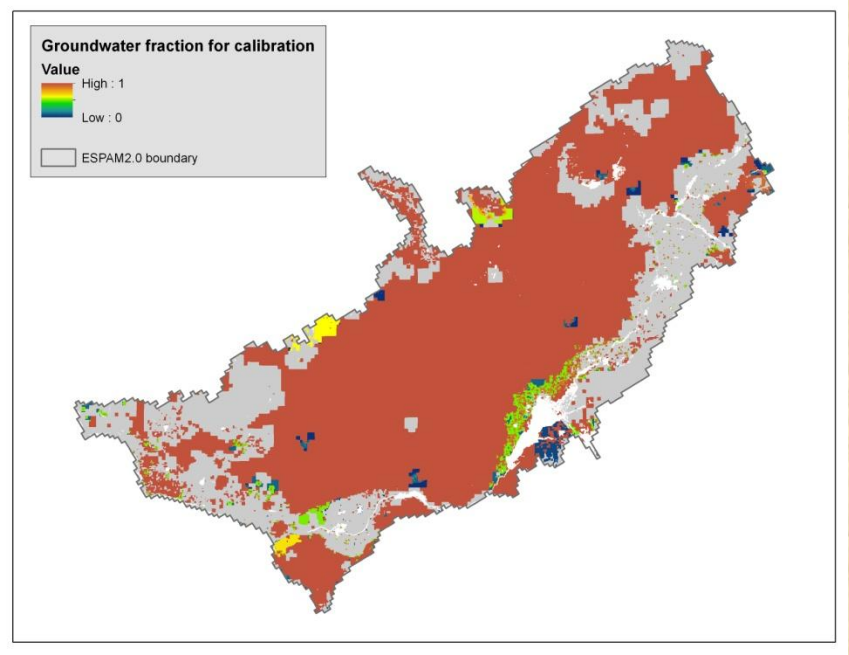
2008 Irrigated Lands

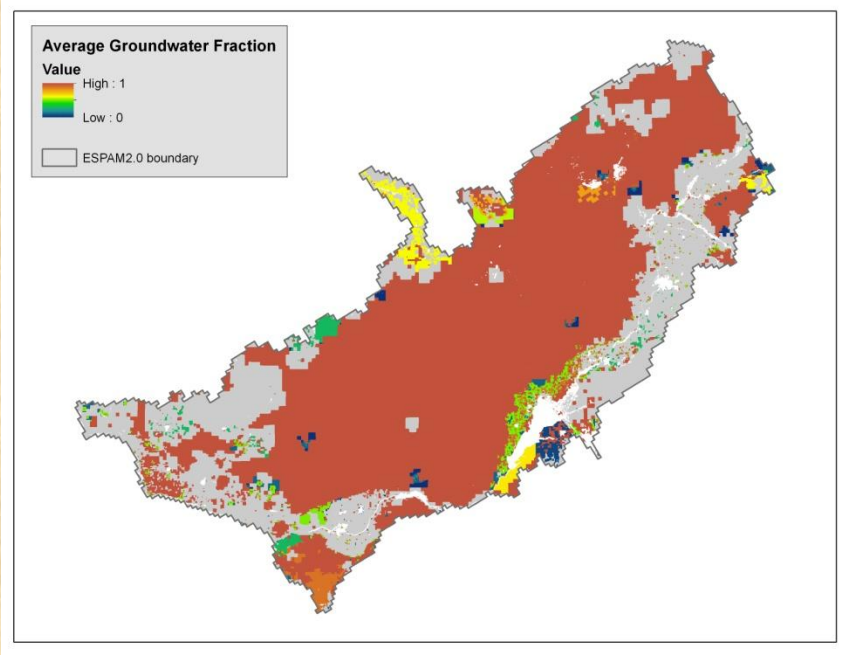


2008 Irrigated Lands

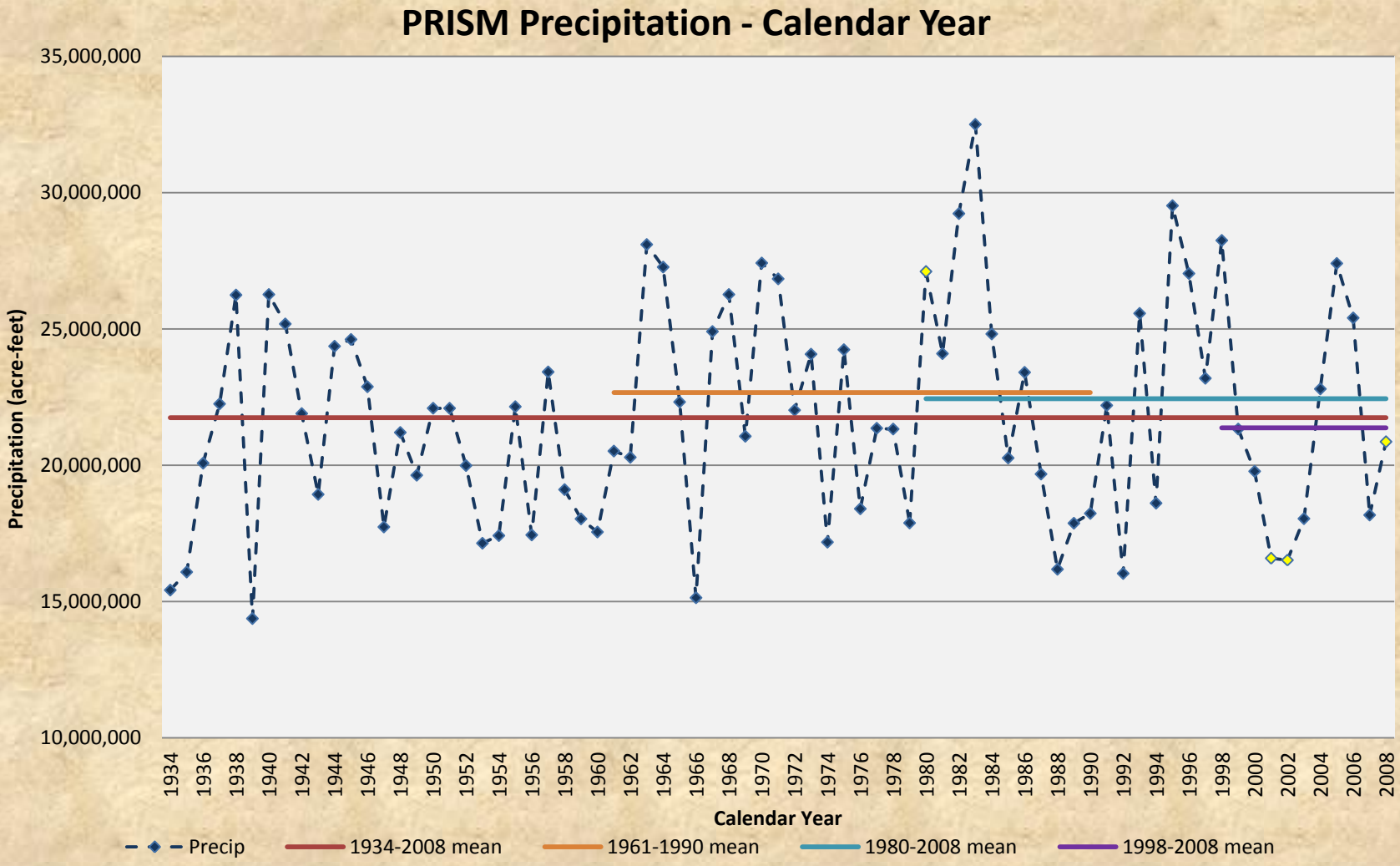


Average Groundwater Fraction

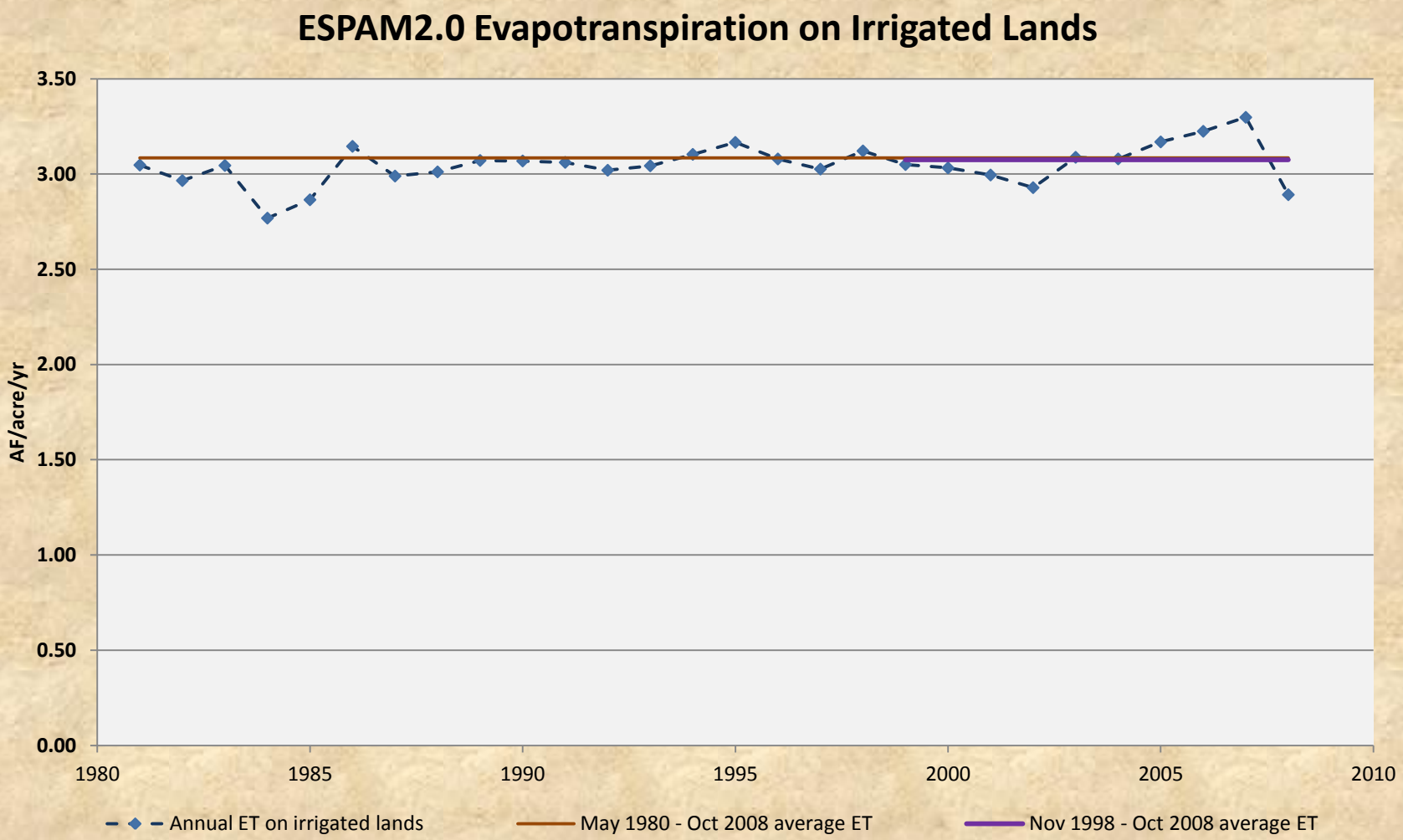




Average Annual Precipitation



Average Annual Evapotranspiration



QUESTIONS???