



Impacts of Magic Reservoir Winter Drawdown (2012)

Presented by: David Hoekema

Date: 5/06/2014



2012 November Recharge on the Big Wood River

Background

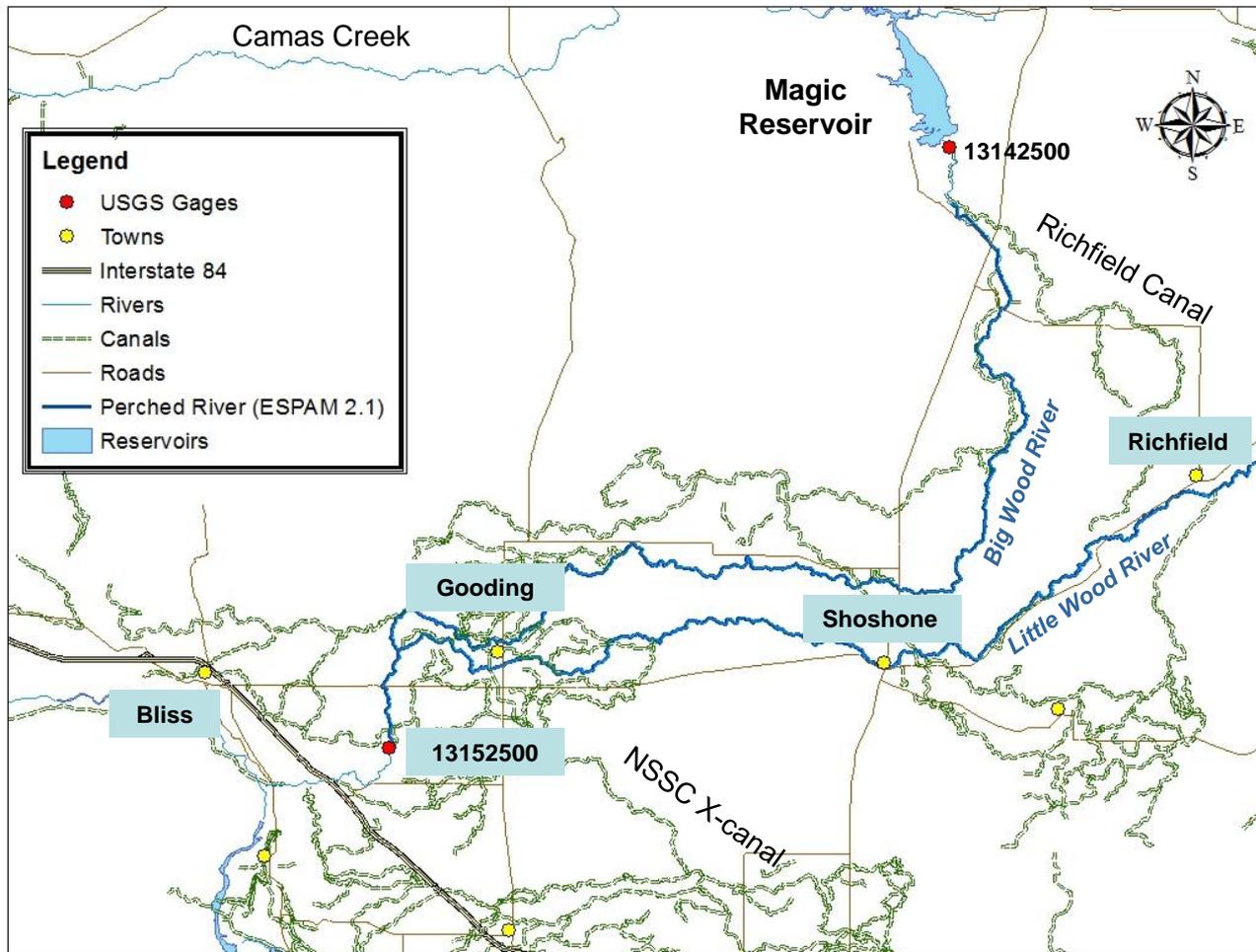
- Repairs of a Leaky Hydraulic Oil Line Results in Discharge of $\approx 53,000$ acre-feet
- Two Releases from Oct. 29 - Dec. 7
- Two gages available
 - (1) 13142500 (Big Wood blw Magic)
 - (2) 13152500 (Malad River nr Gooding)

2012 November Recharge on the Big Wood River

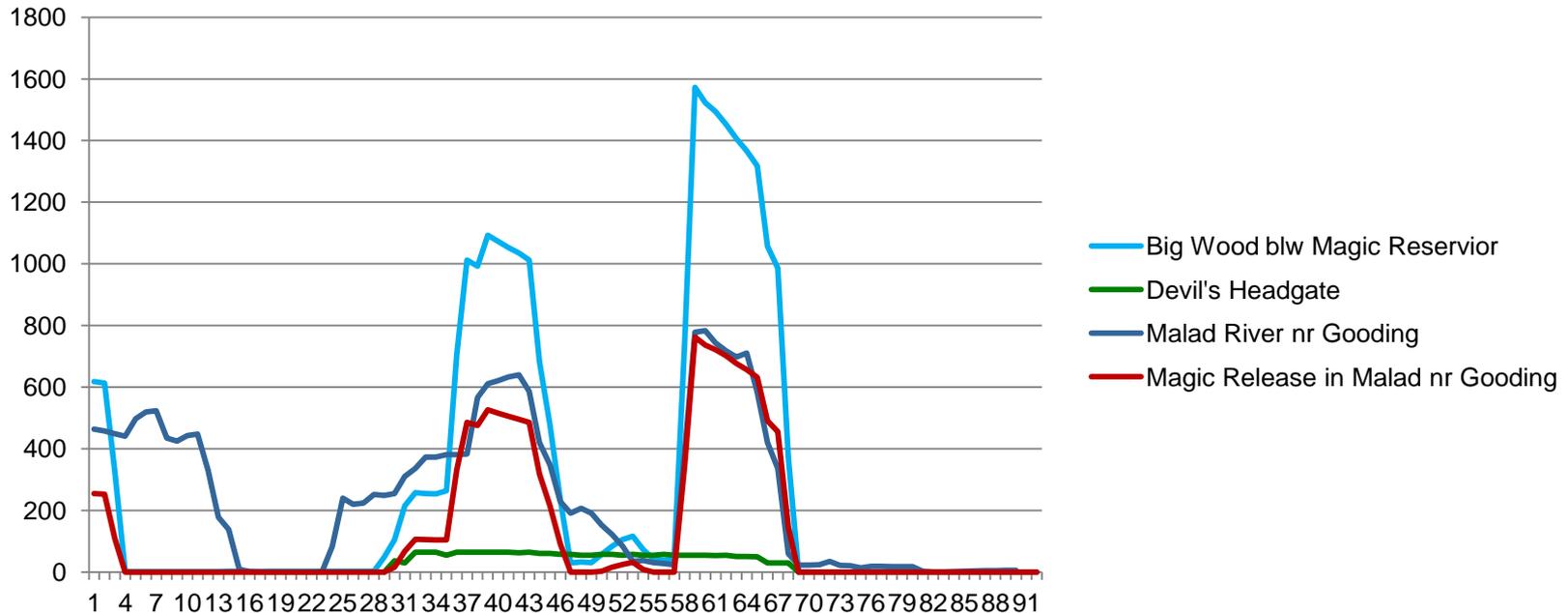
Project Objectives

- Quantify Recharge from the Magic Reservoir Release
- Model Impacts to Aquifer Heads and Spring Discharge
- Compare Modeled vs. Observed Results

Study Area



Quantify Recharge (6)



Release ≈ **53,000** acre-feet

Recharge ≈ **26,500** acre-feet w/n Big Wood River

4,000 acre-feet at Devil's Headgate

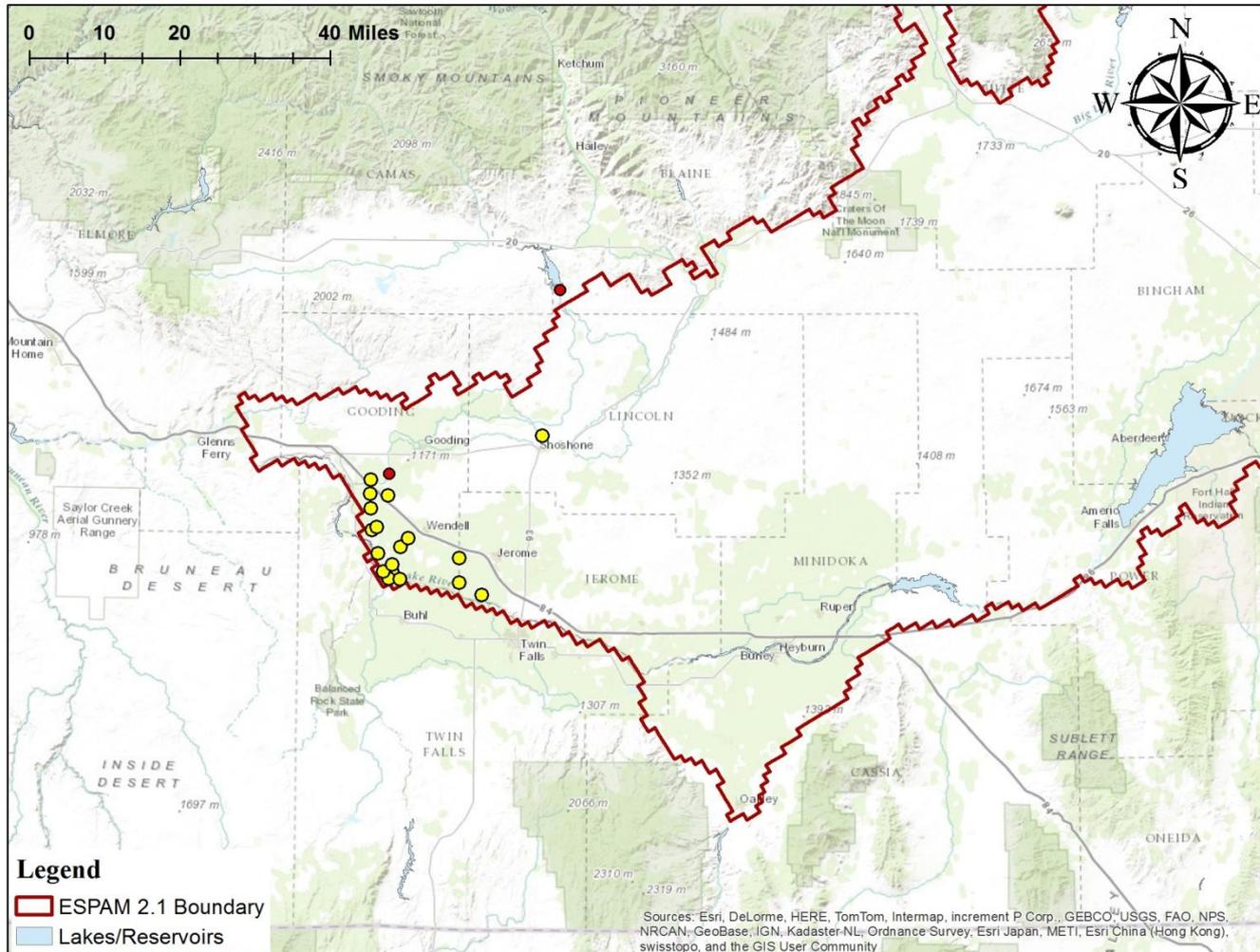
Flow to the Snake ≈ **22,500** acre-feet

Quantify Recharge (6)

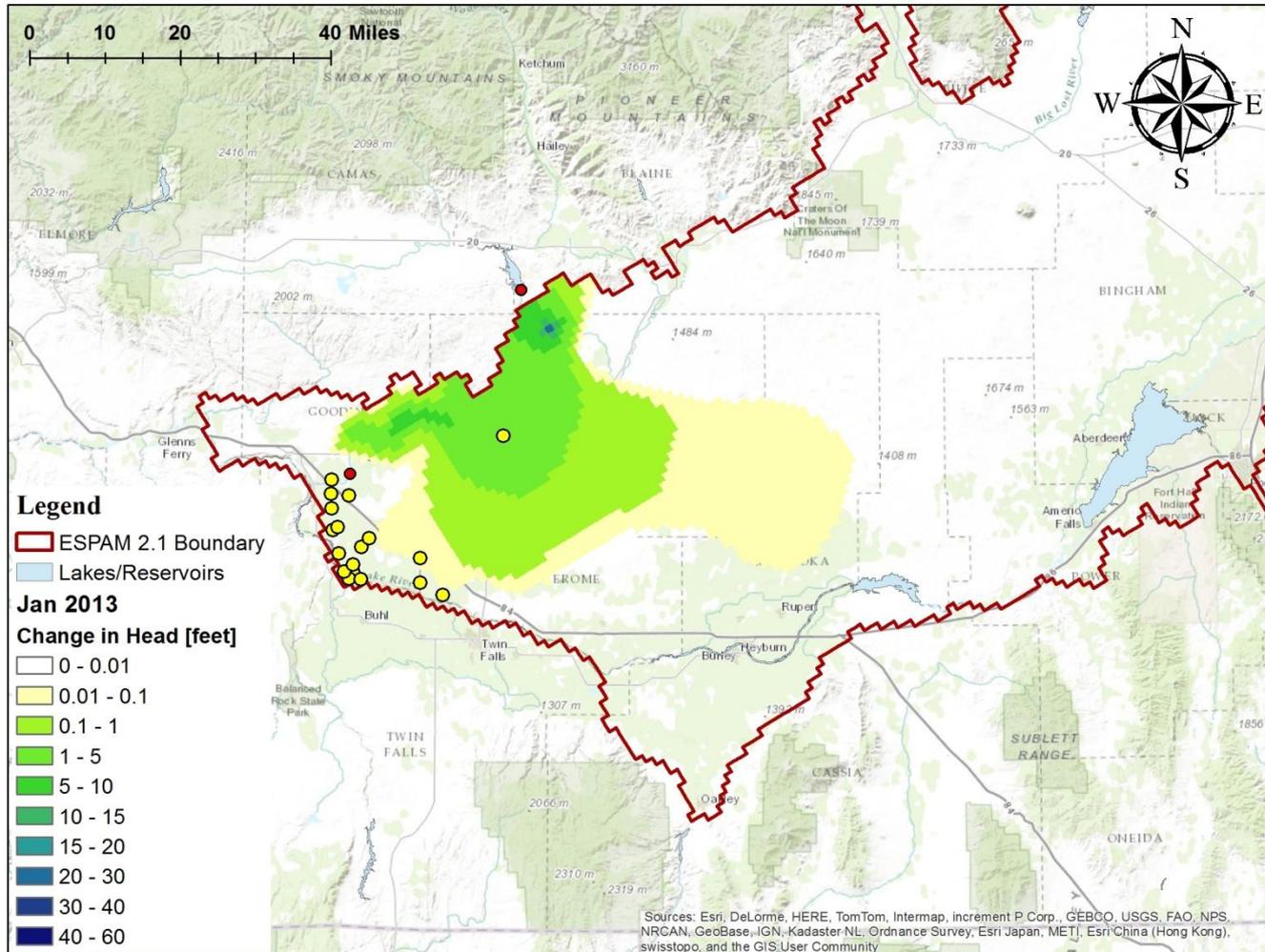
Release and Recharge Hydrographs



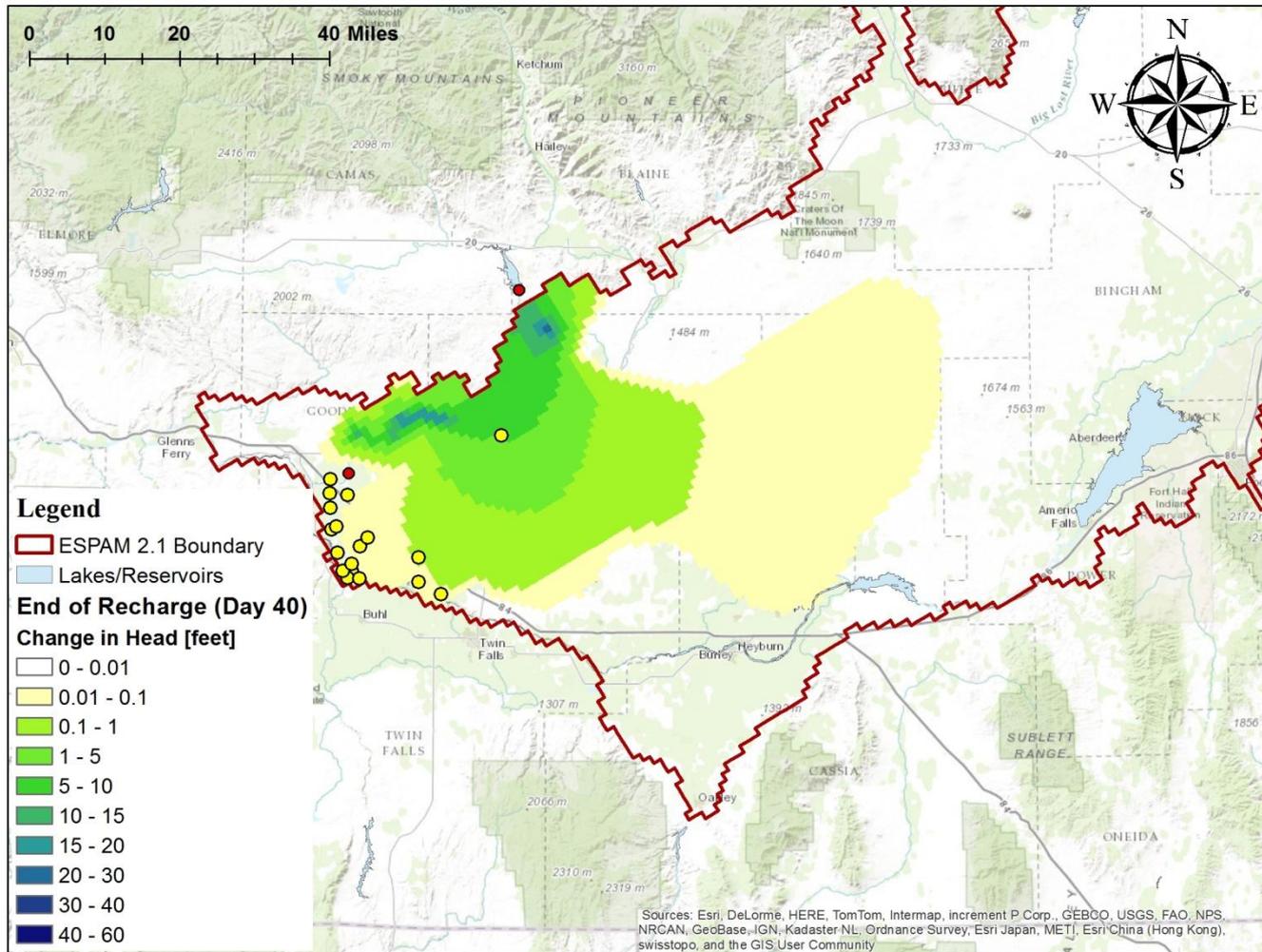
Recharge Area



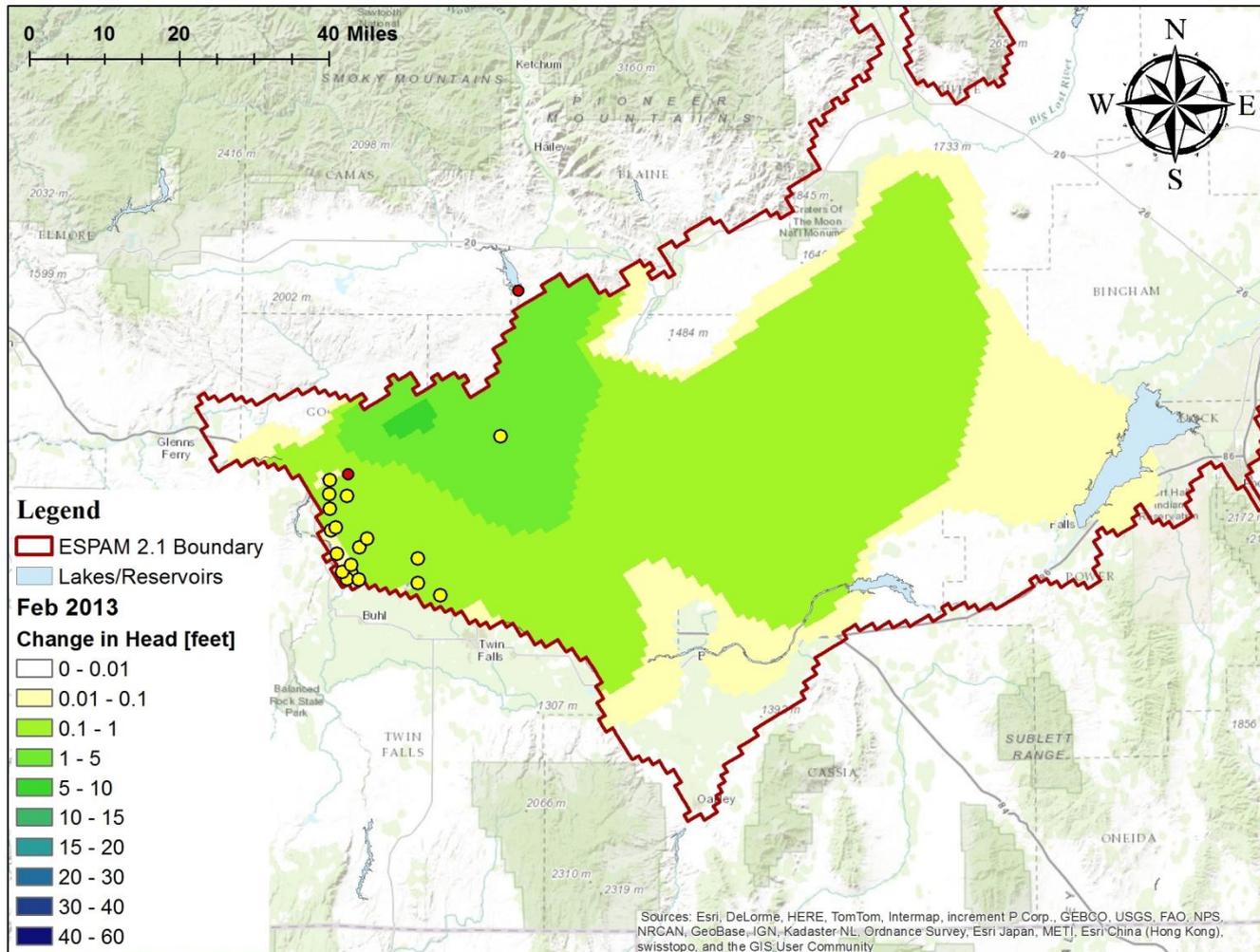
Modeled Impacts (End of Recharge)



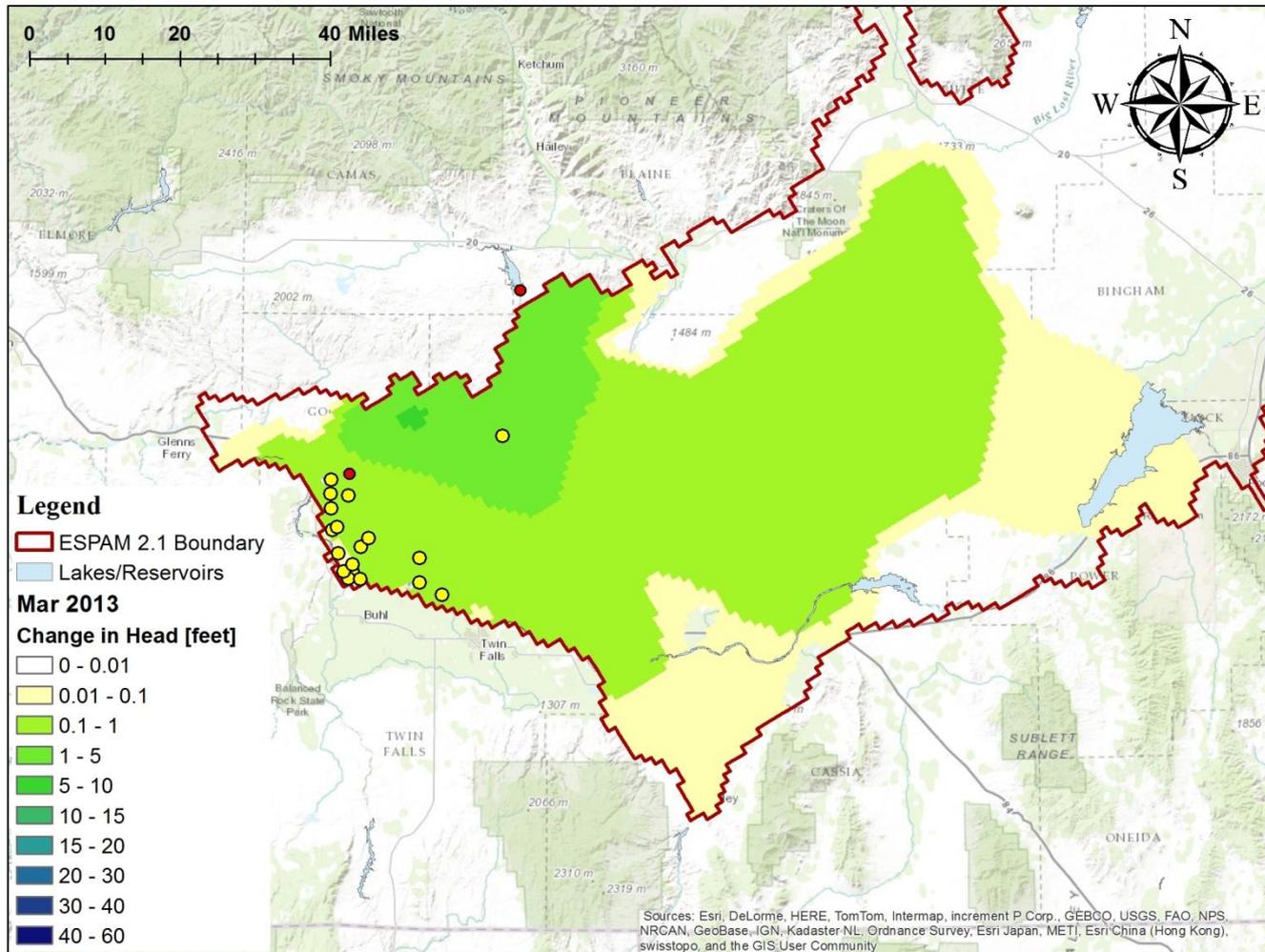
Modeled Impacts (January 2013)



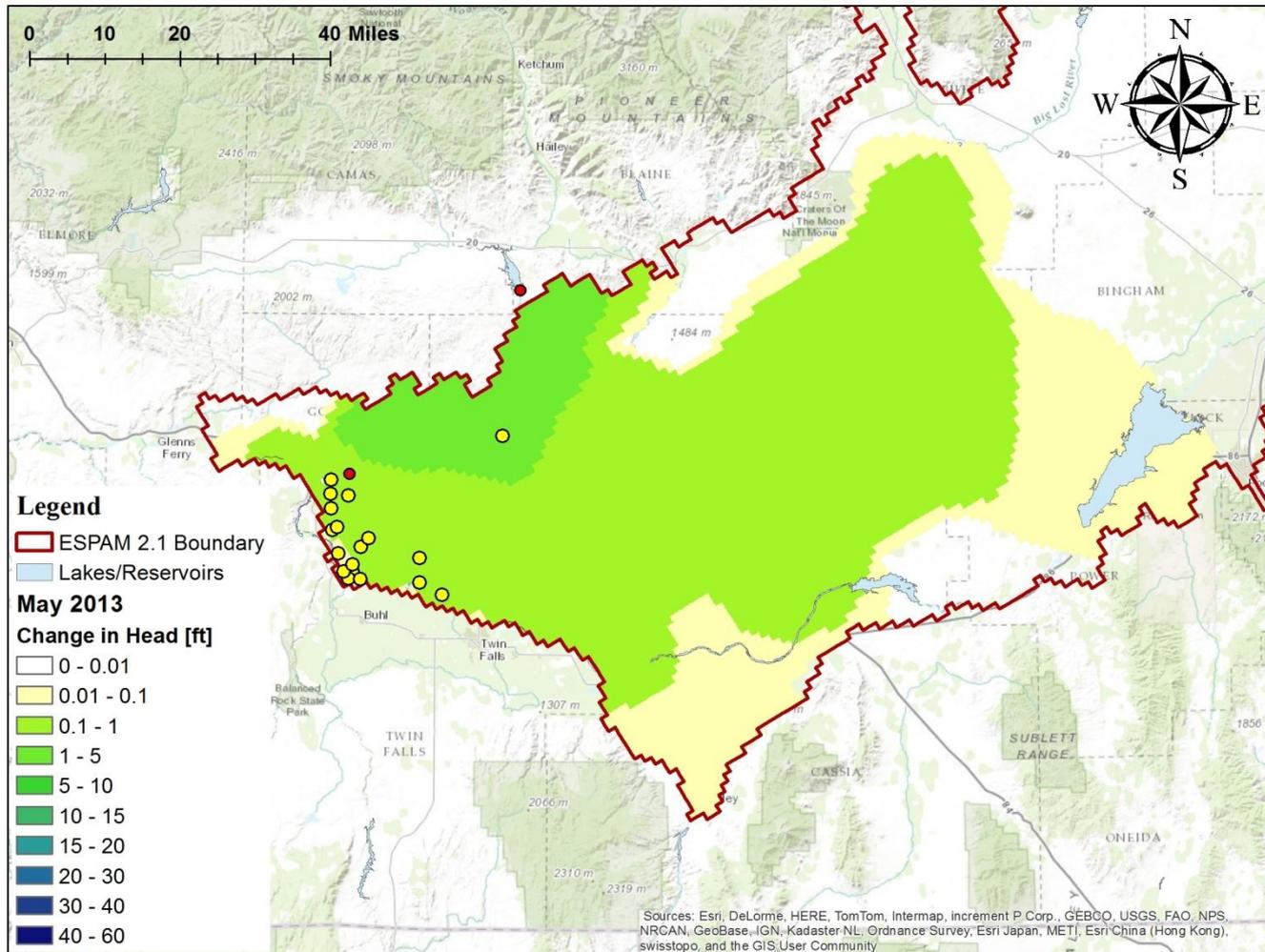
Modeled Impacts (February 2013)



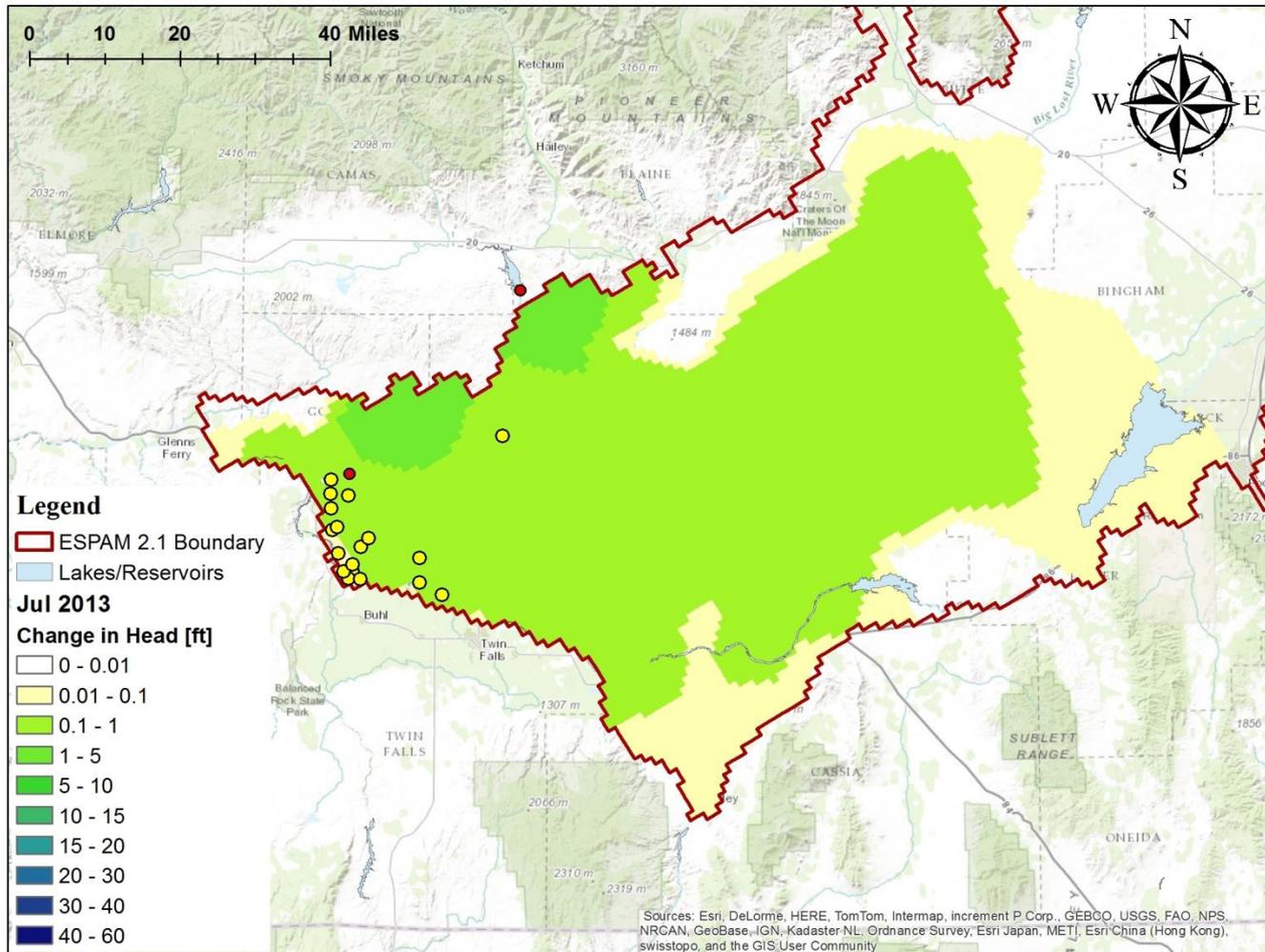
Modeled Impacts (March 2013)



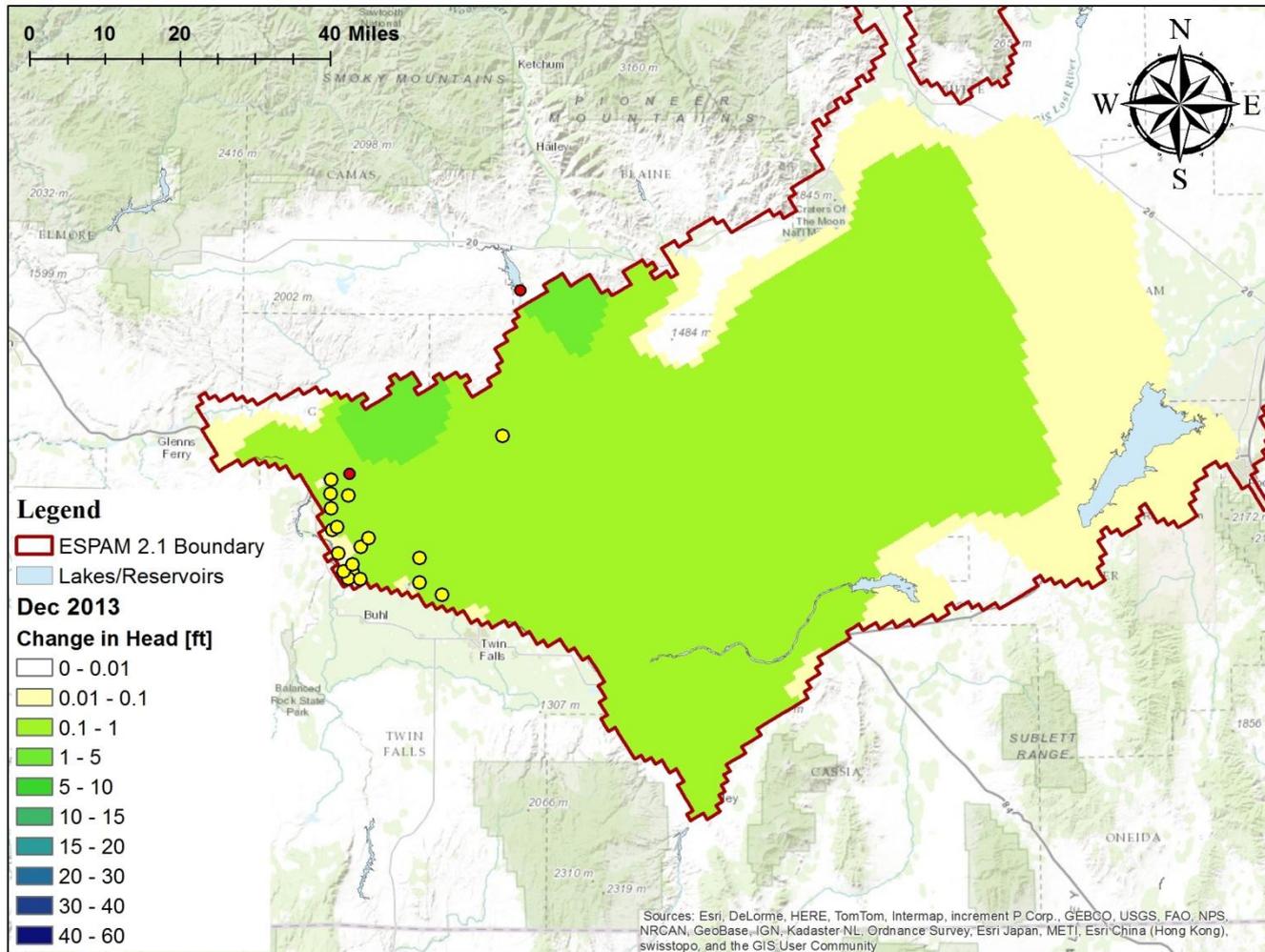
Modeled Impacts (May 2013)



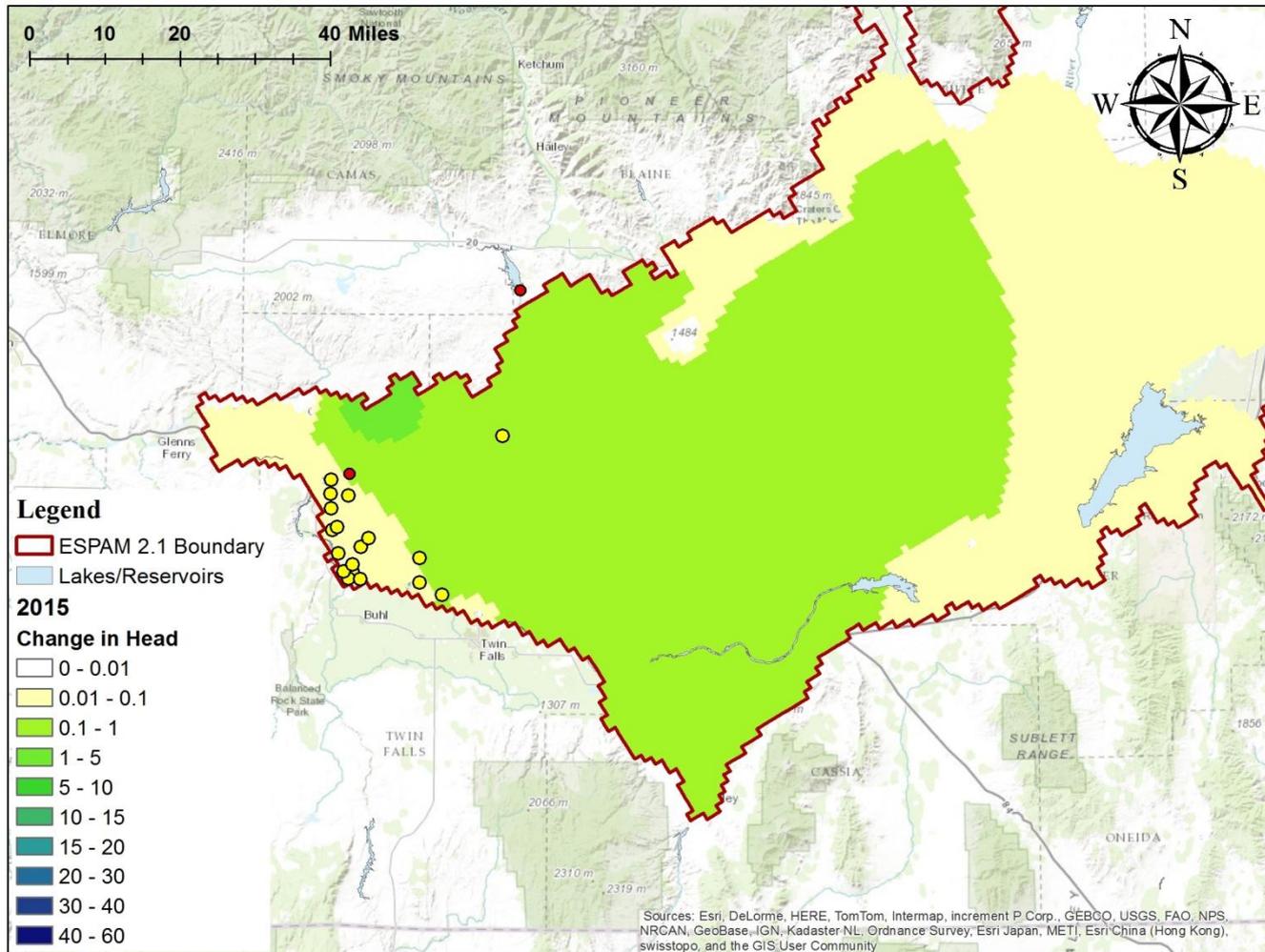
Modeled Impacts (July 2013)



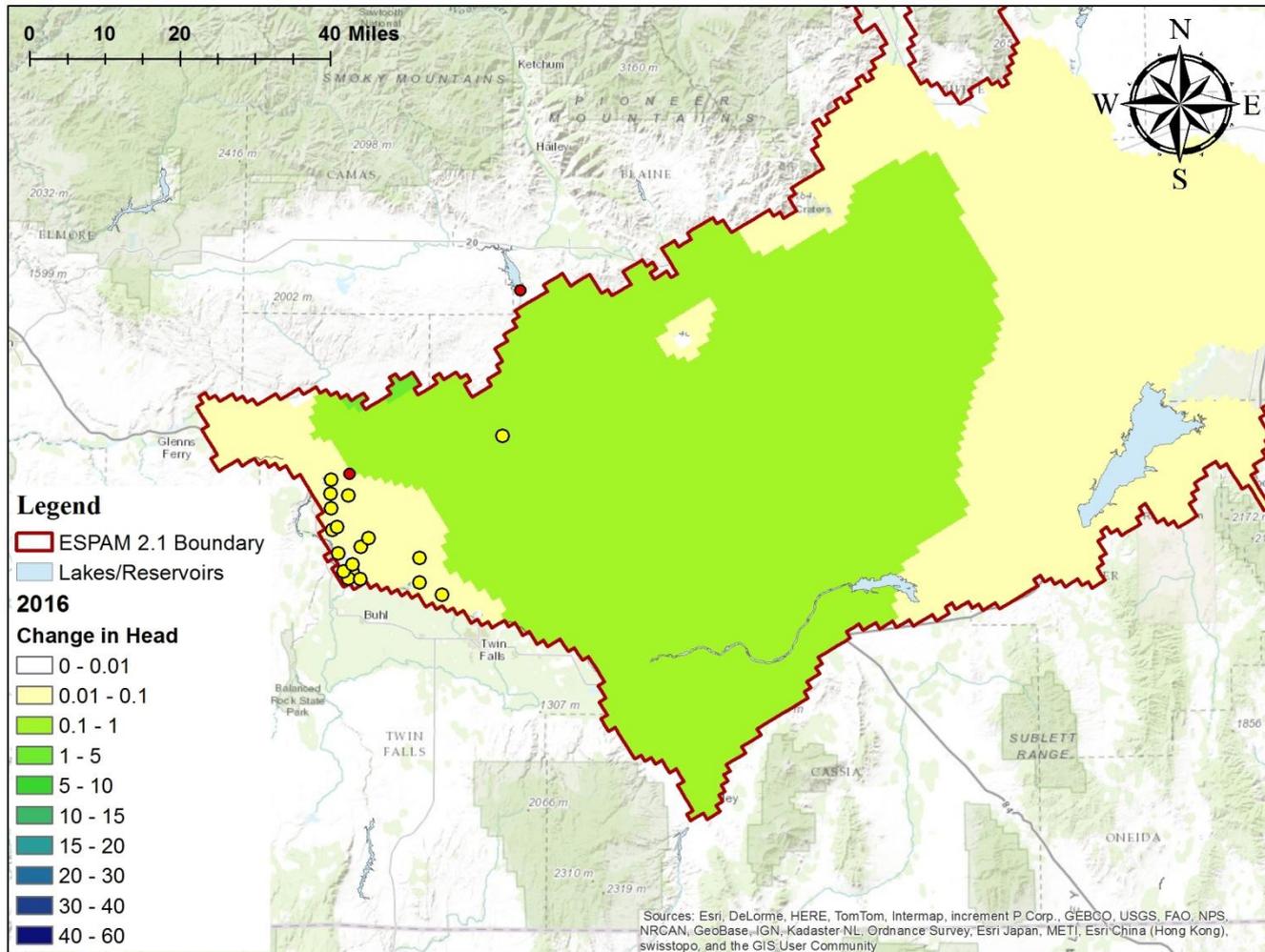
Modeled Impacts (December 2013)



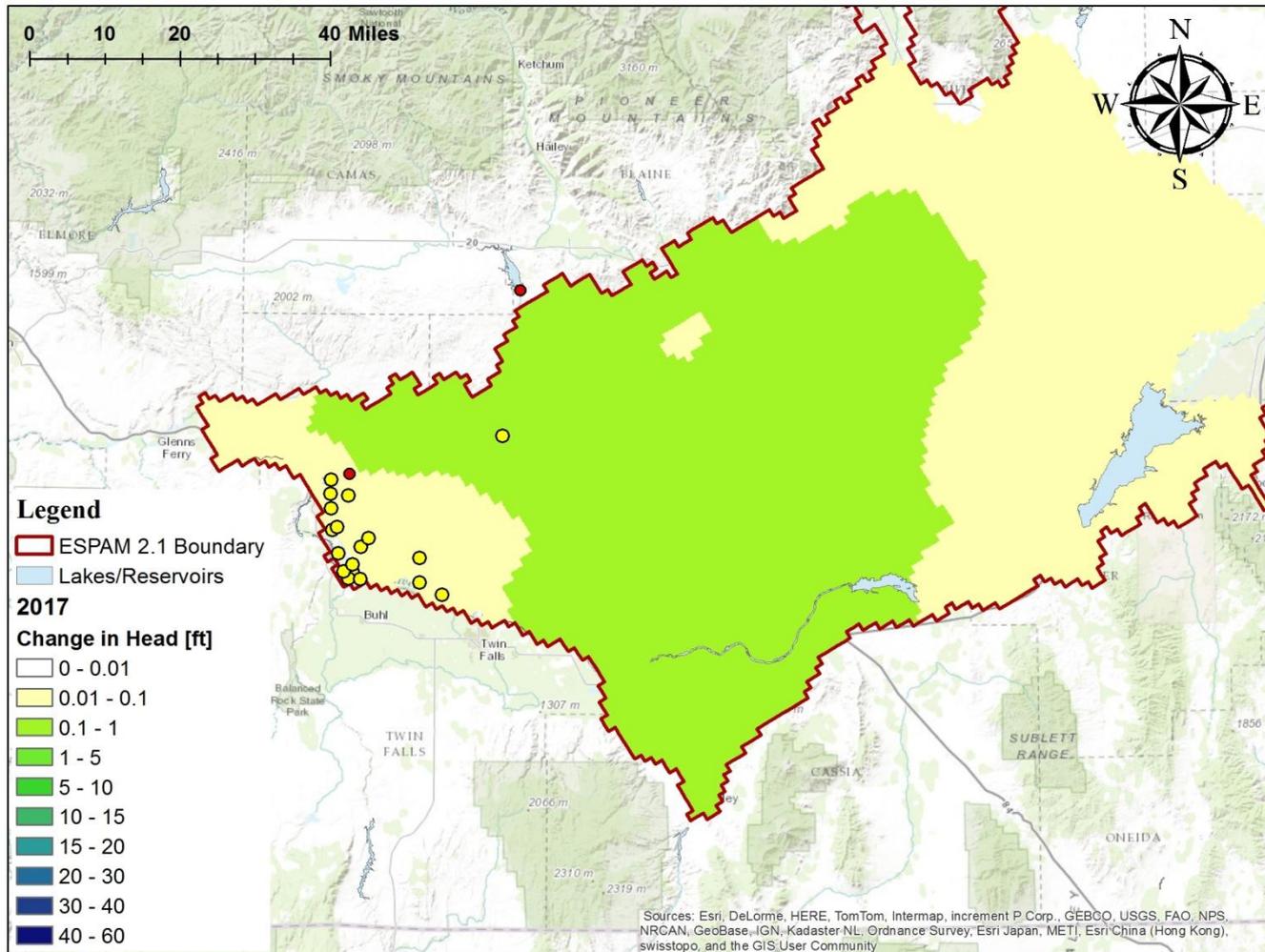
Modeled Impacts (2015)



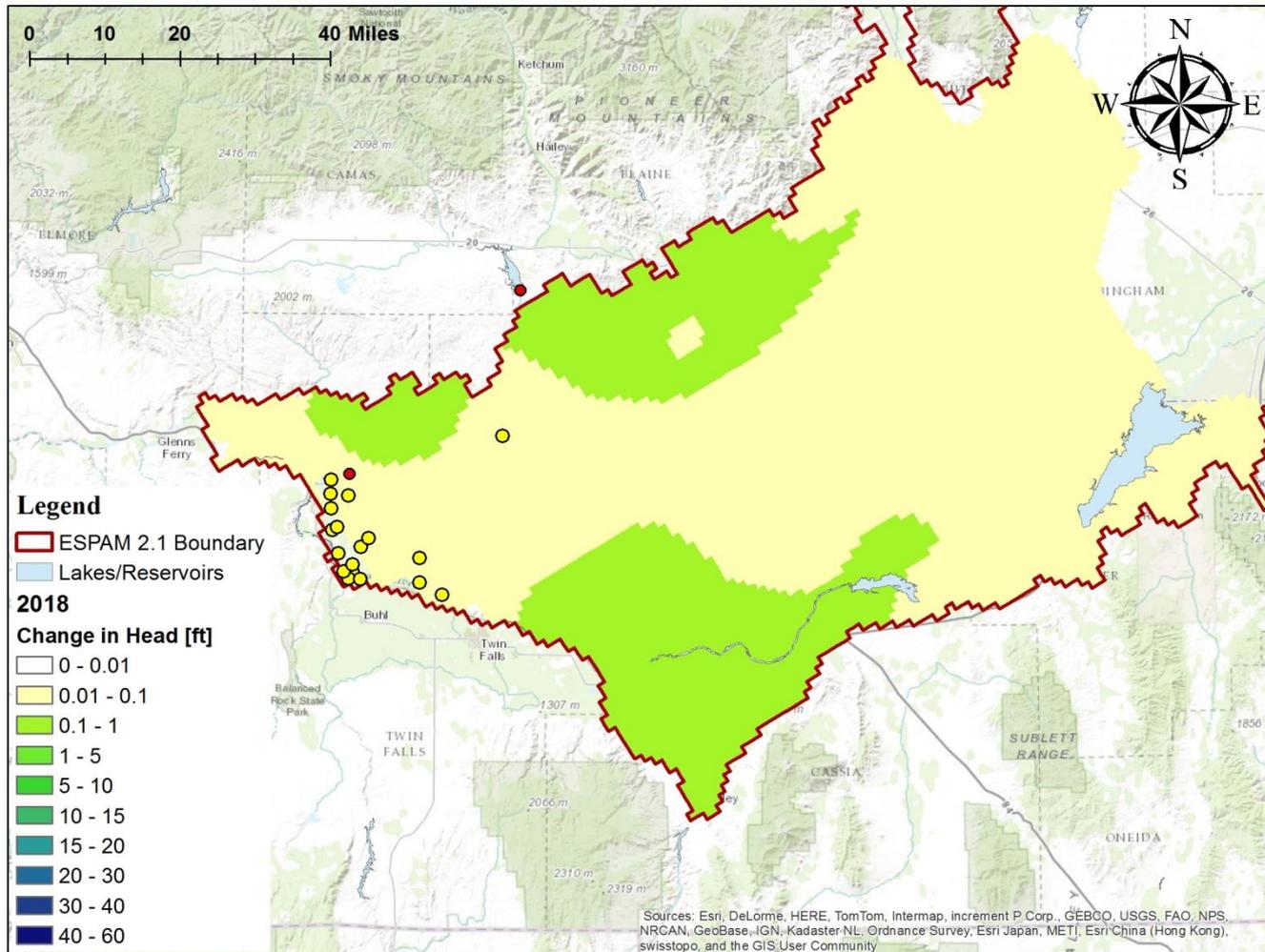
Modeled Impacts (2016)



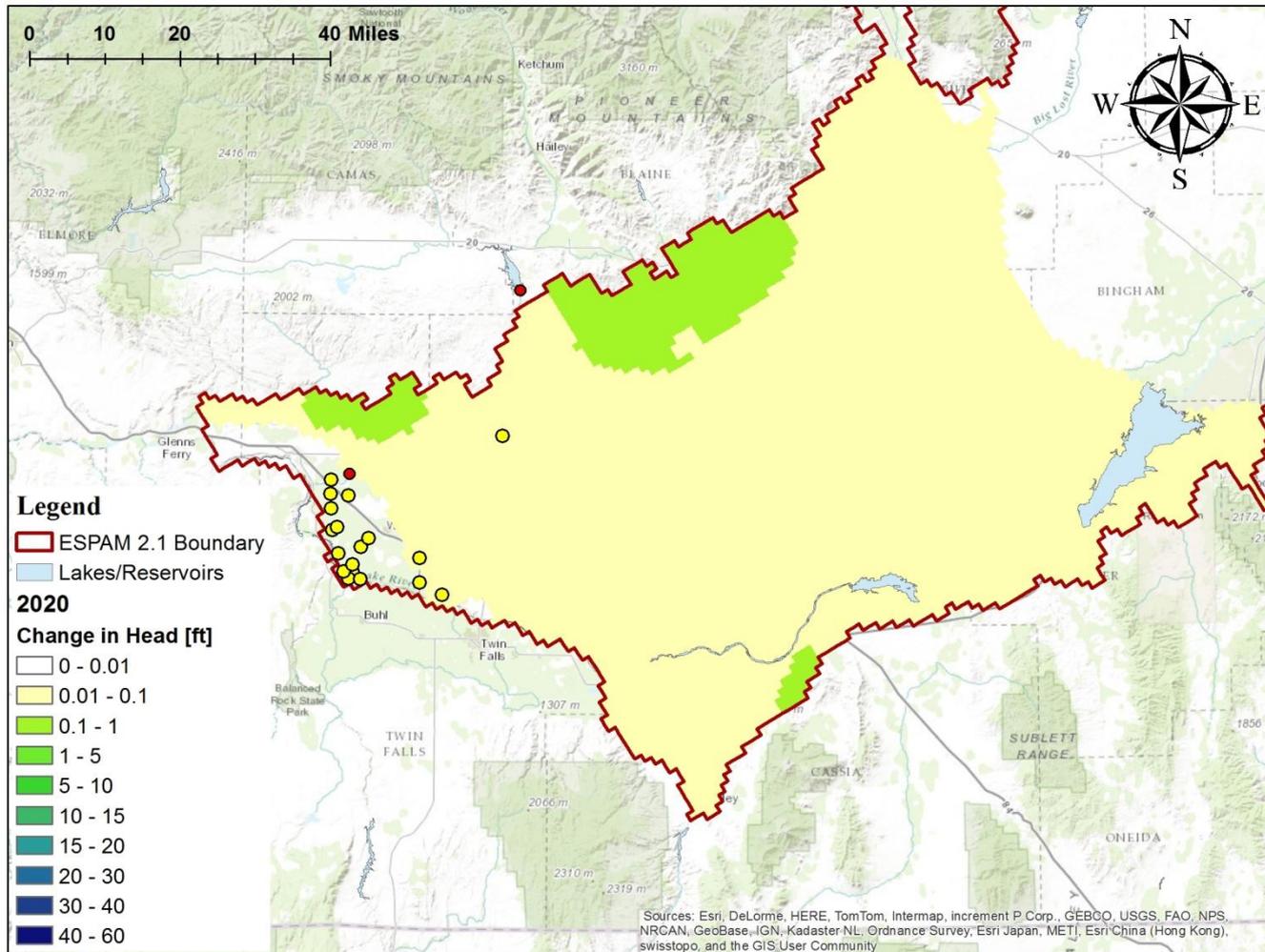
Modeled Impacts (2017)



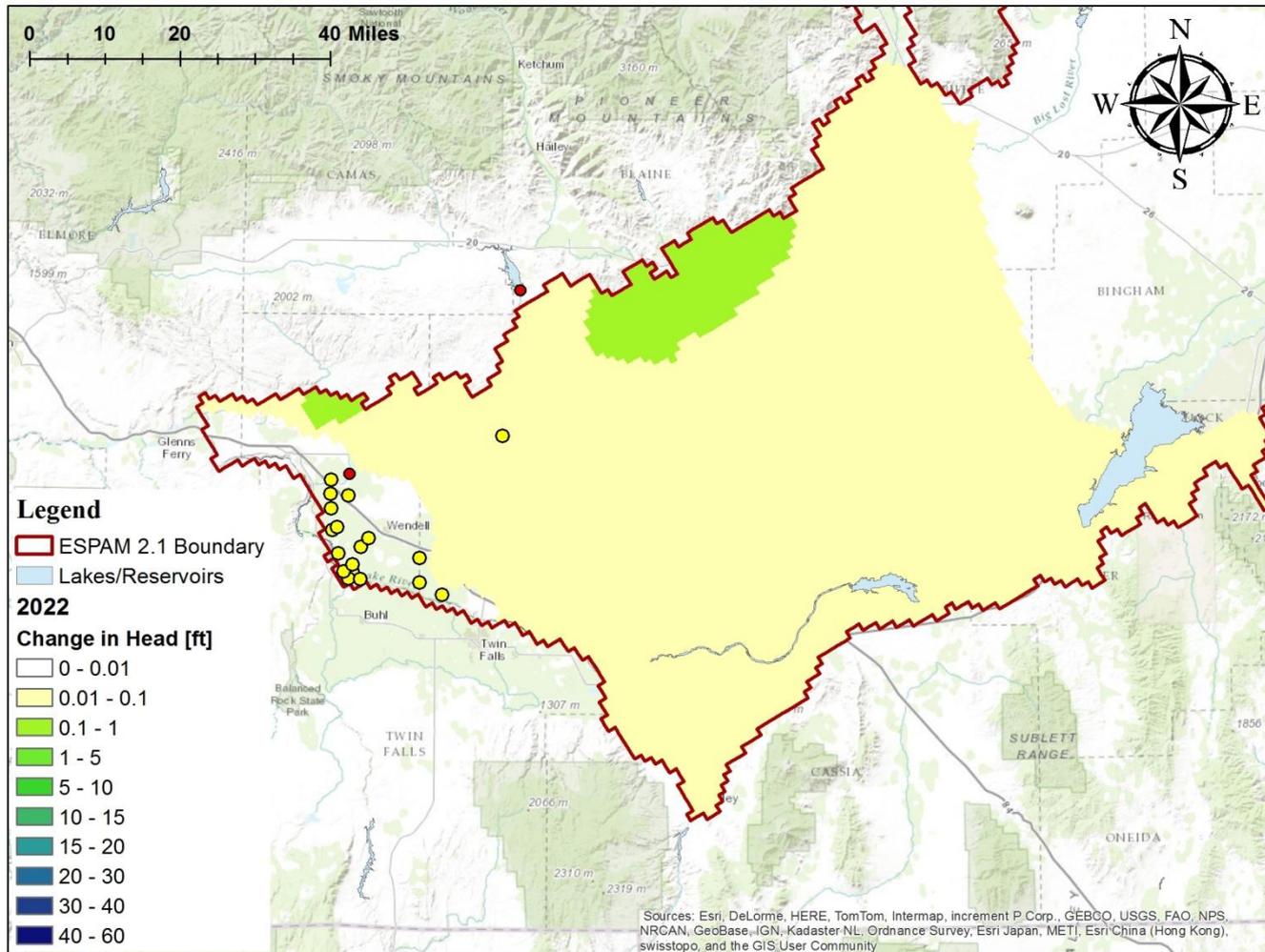
Modeled Impacts (2018)



Modeled Impacts (2020)

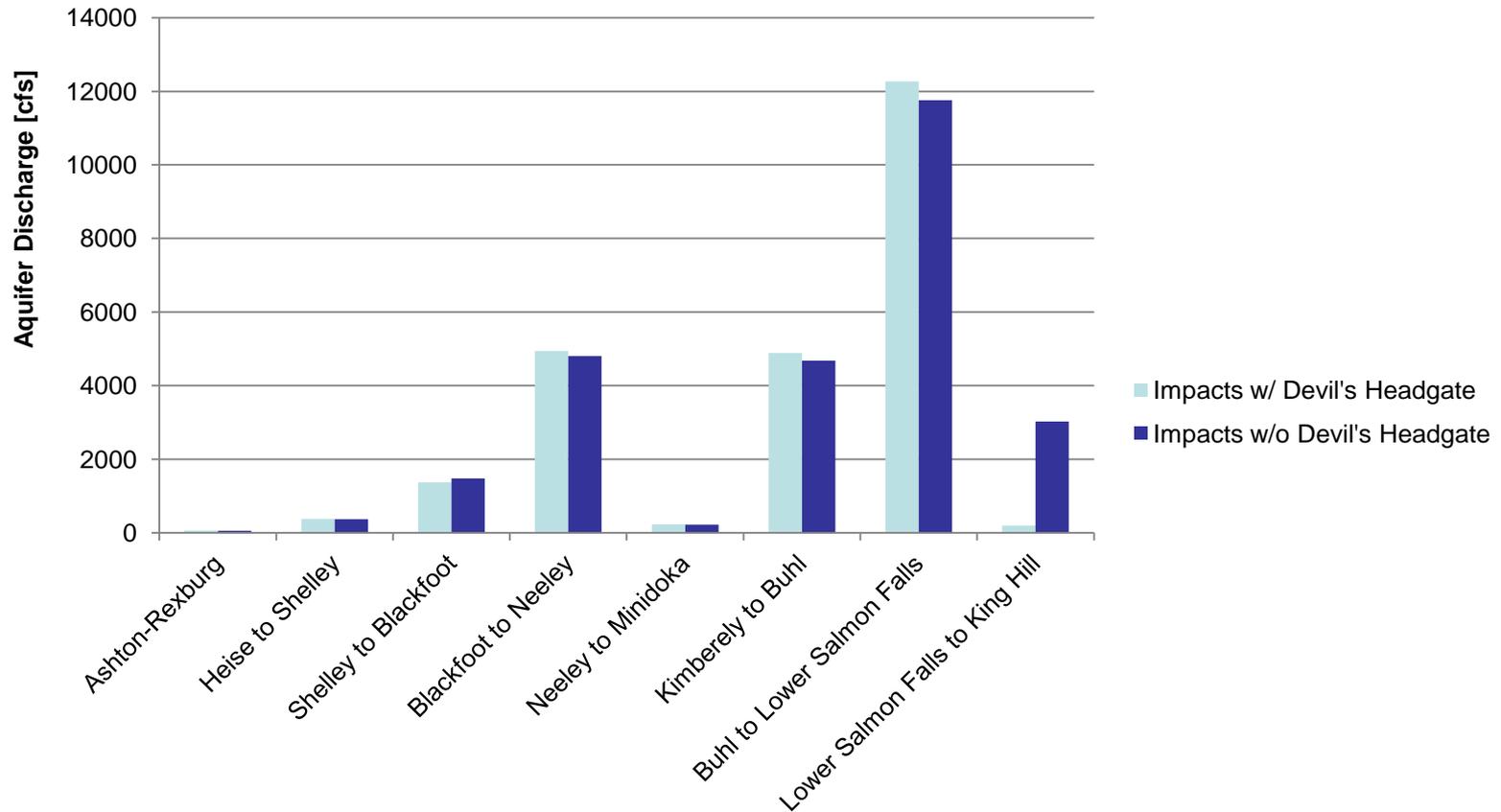


Modeled Impacts (2020)



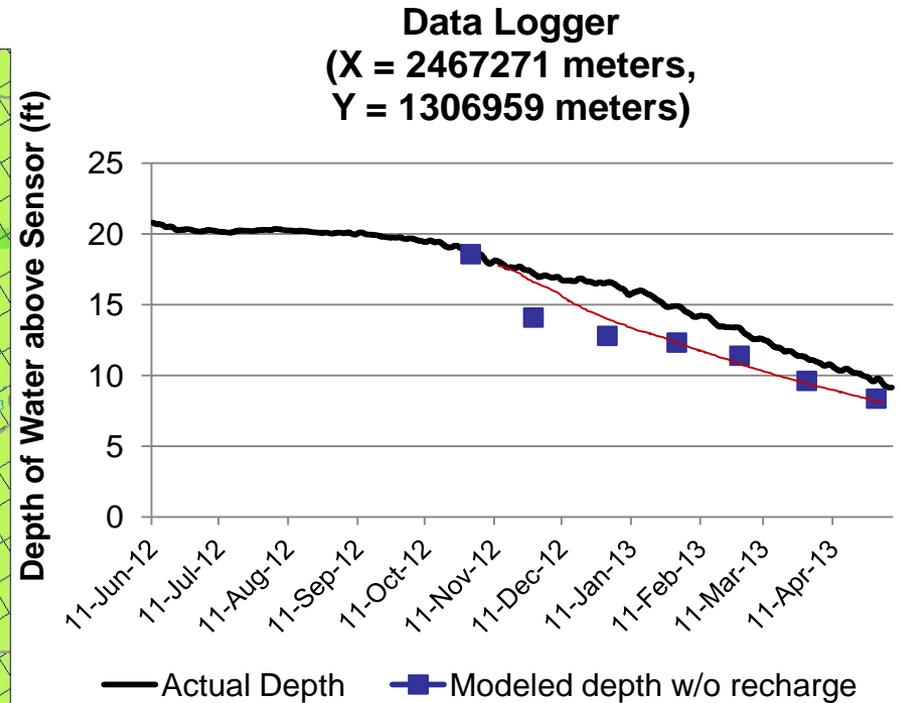
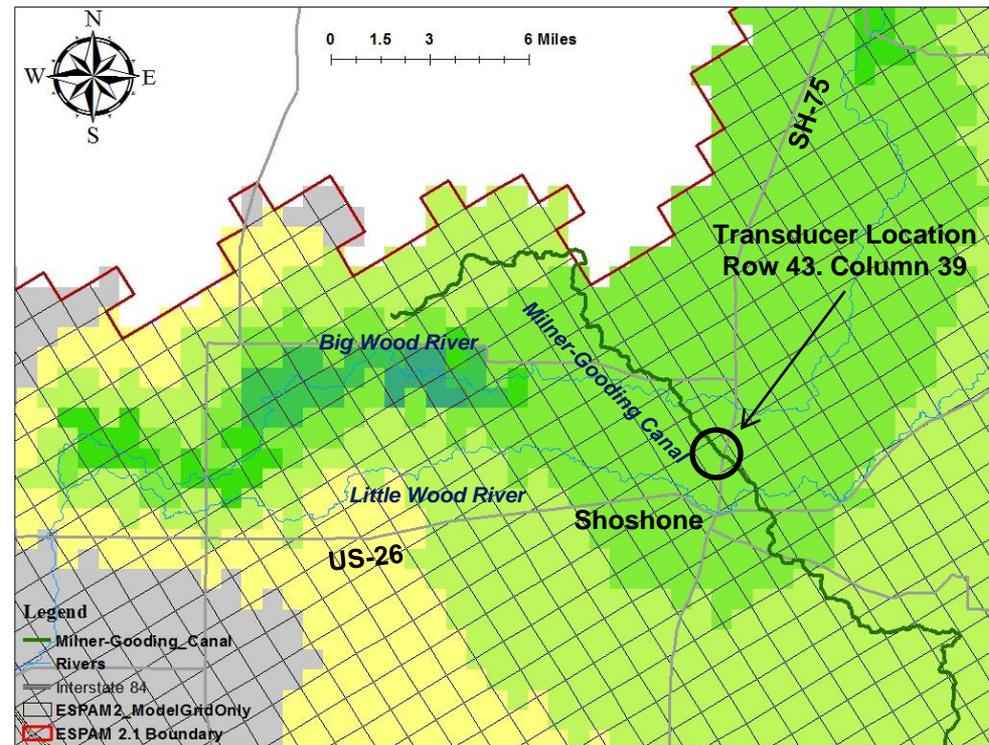
Impact on Reaches

Aquifer Discharge by Reach from 2012-2022



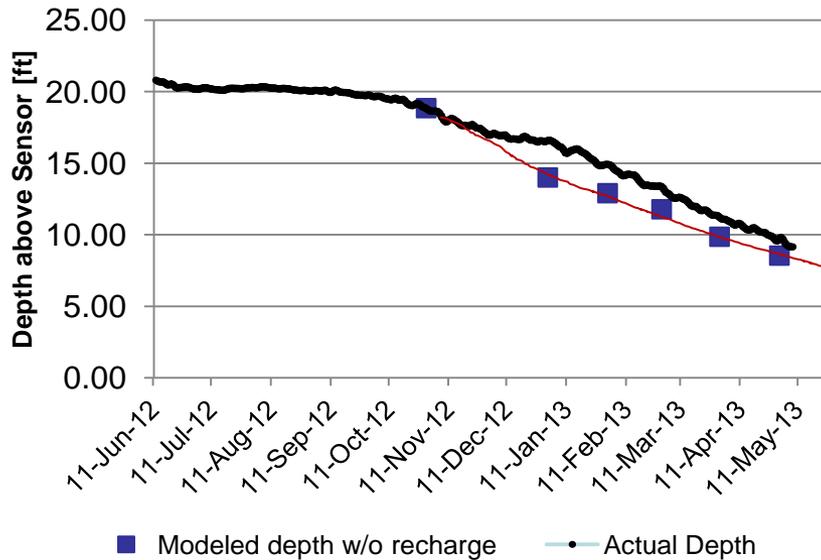
10,500 cfs still in storage

Modeled vs Measured Data w/o Devil's Headgate

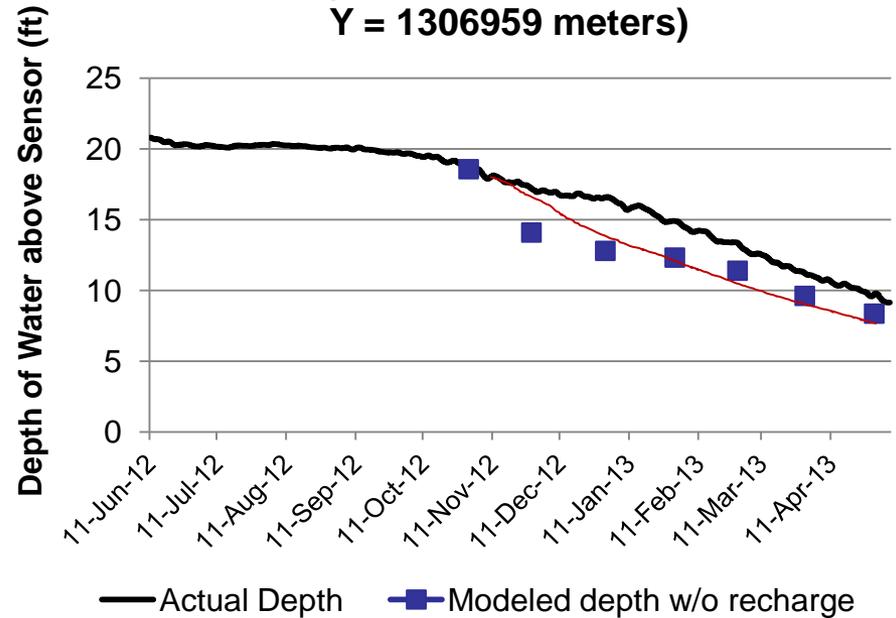


Modeled vs Measured Data w/o Devil's Headgate

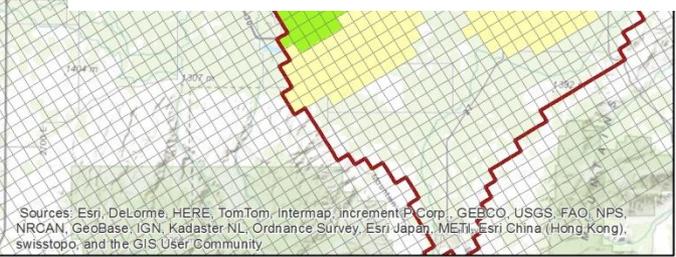
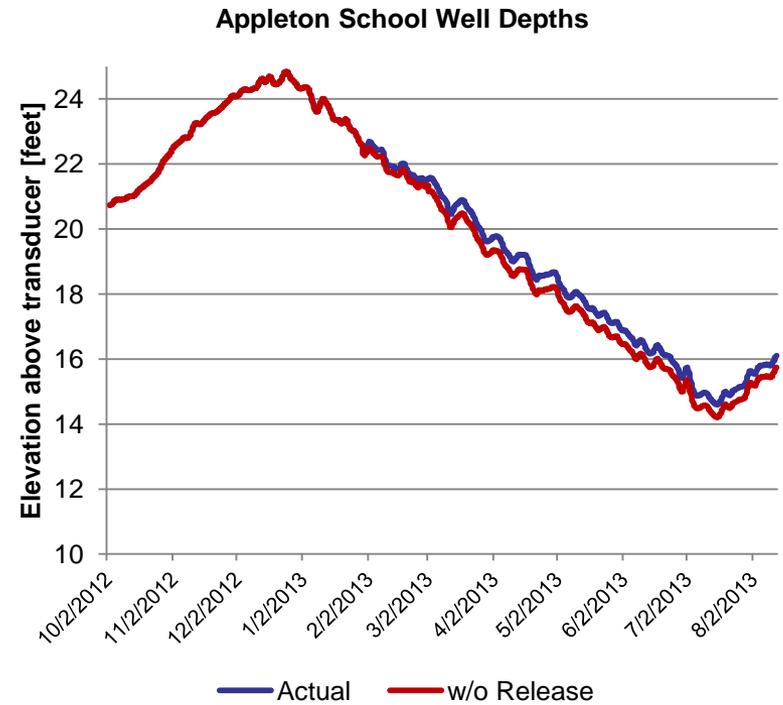
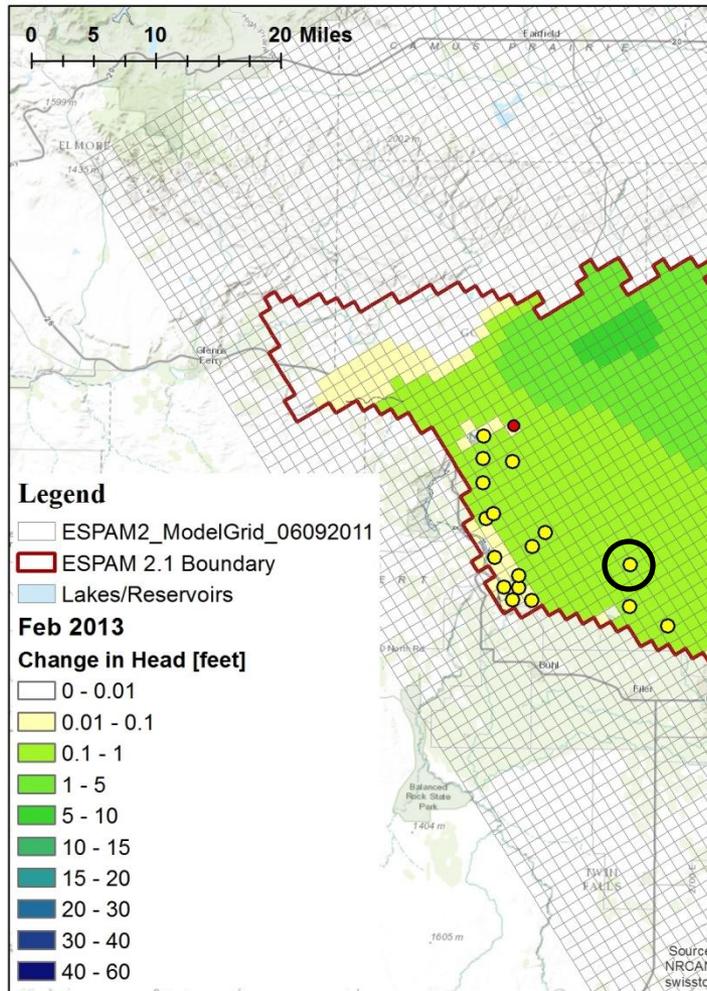
Data Logger
(X = 2467271 meters
Y = 1306959 meters)



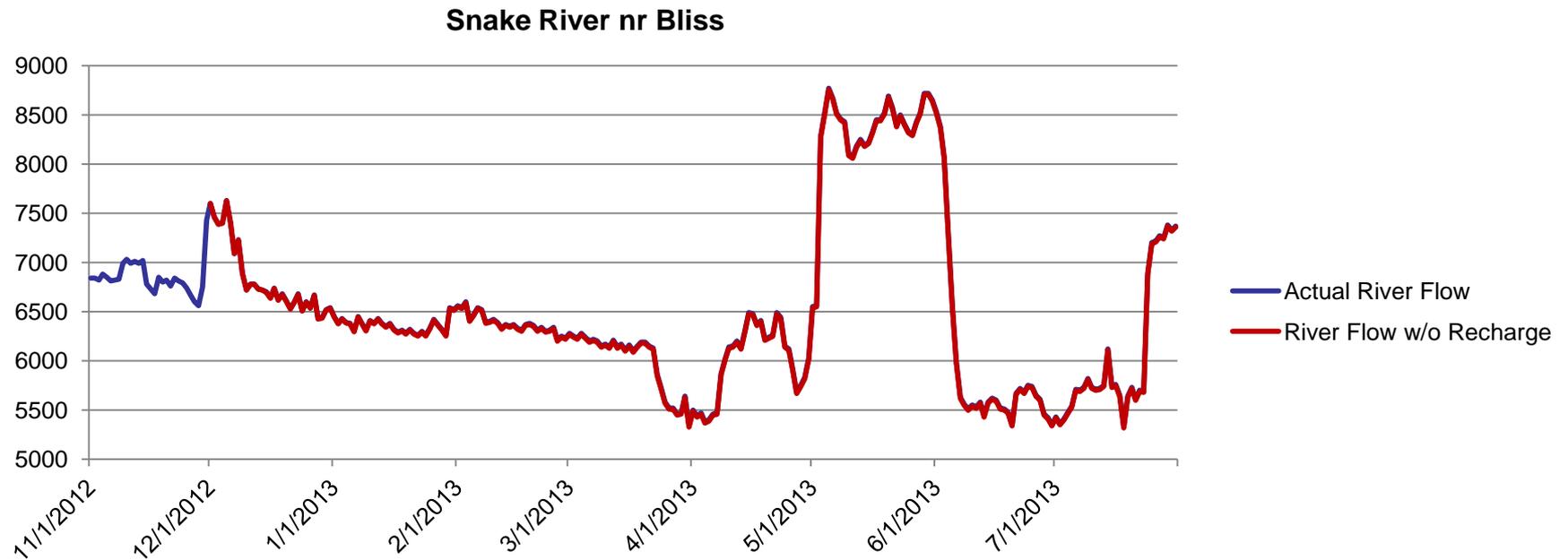
Data Logger
(X = 2467271 meters,
Y = 1306959 meters)



Modeled—June 1, 2013



Impacts on the Snake River

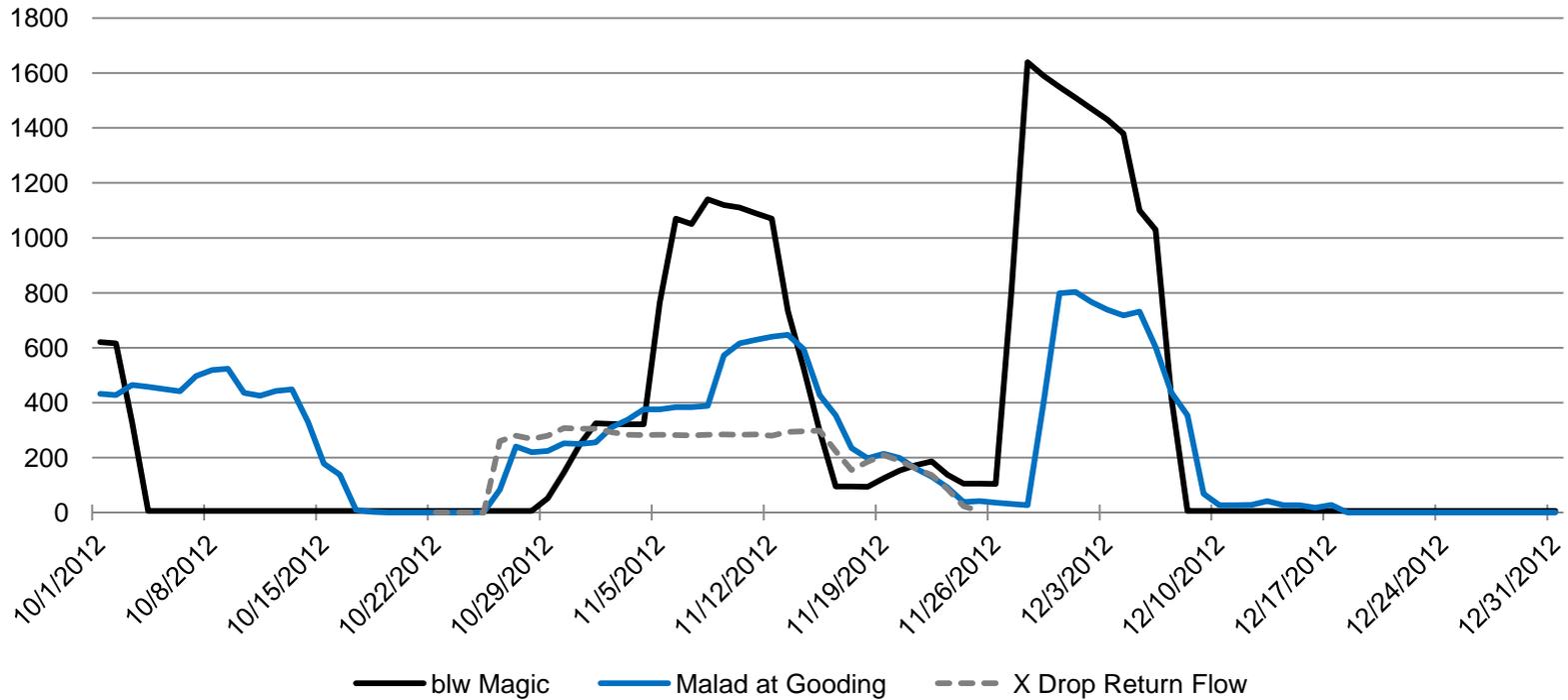


Questions?



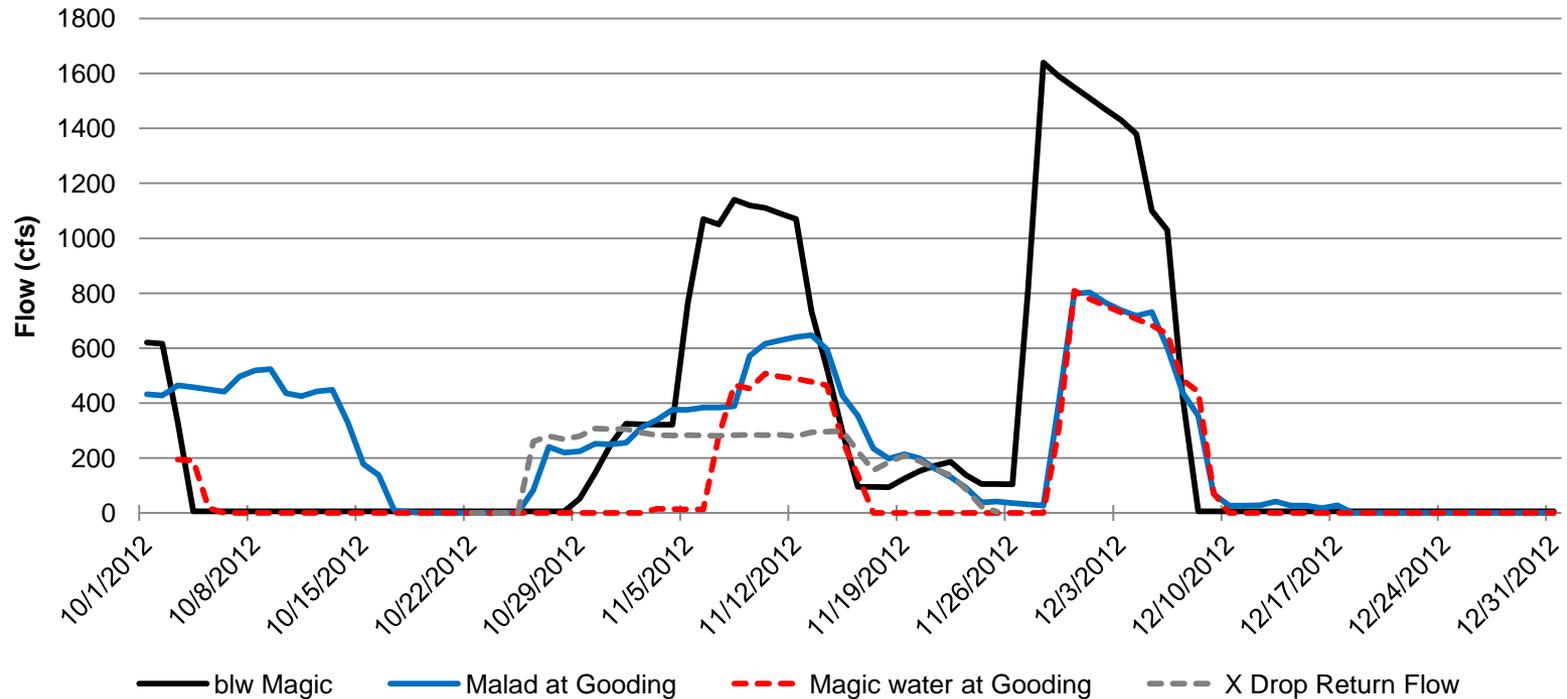
Quantify Recharge (3)

Stream gage data

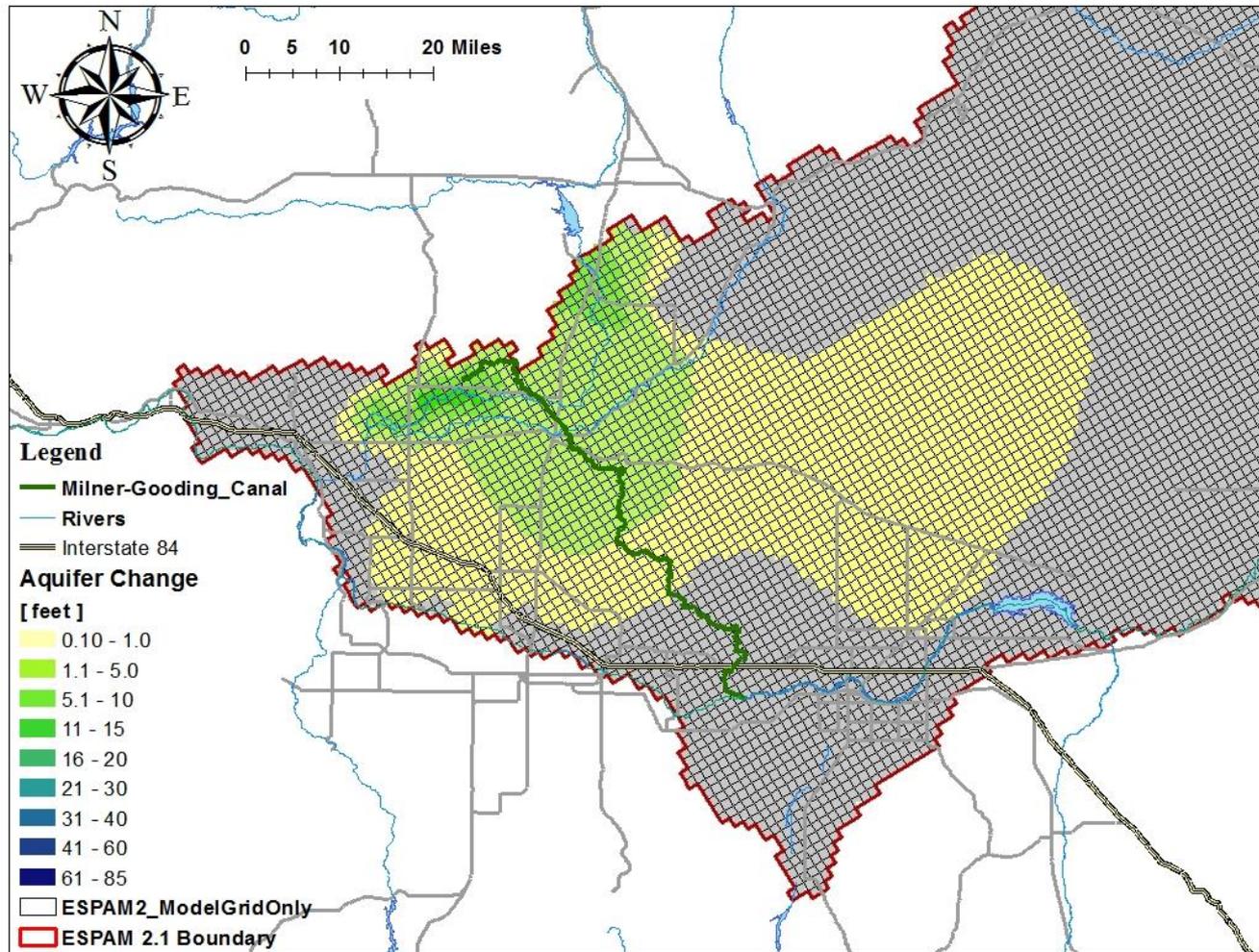


Quantify Recharge (5)

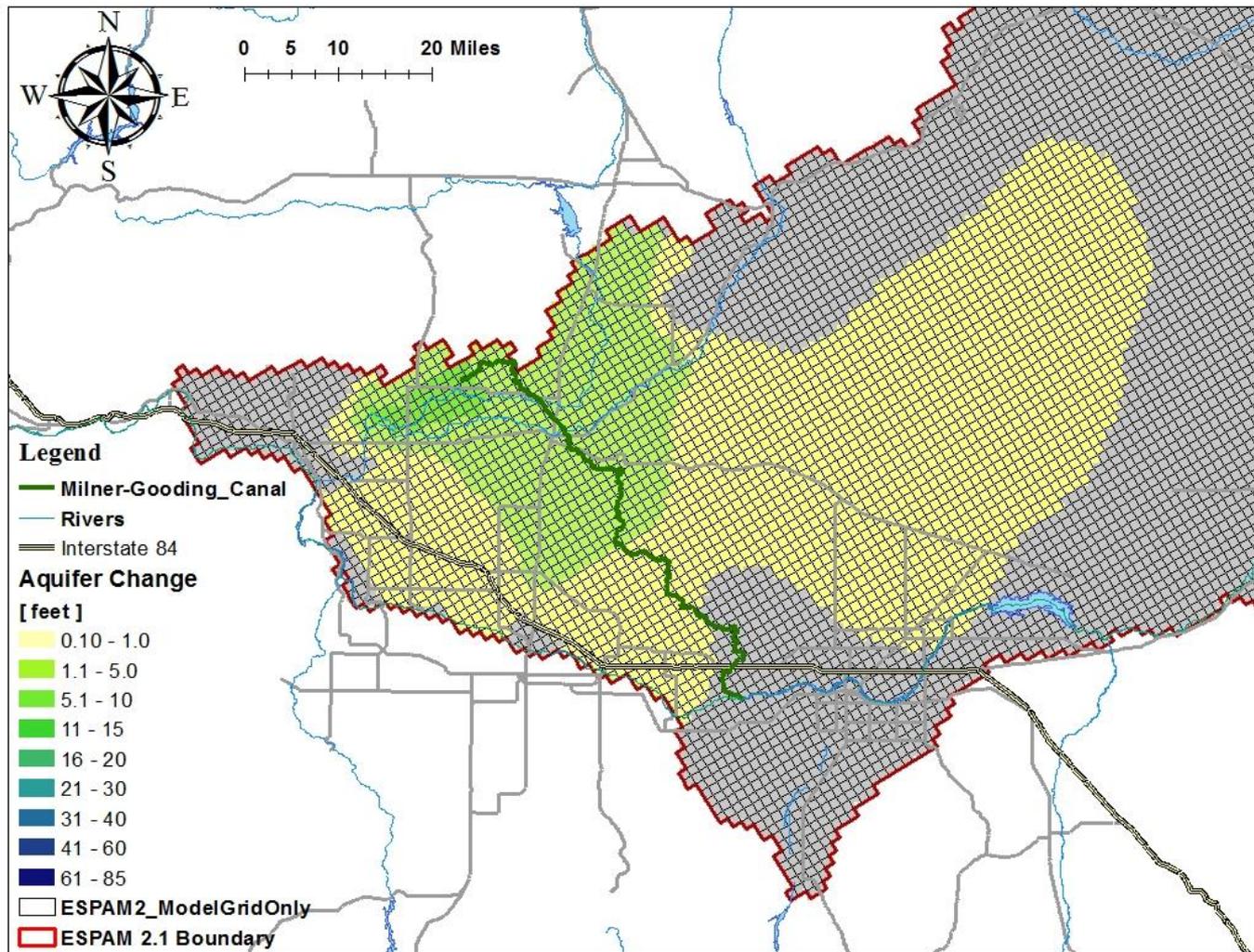
Stream gage data



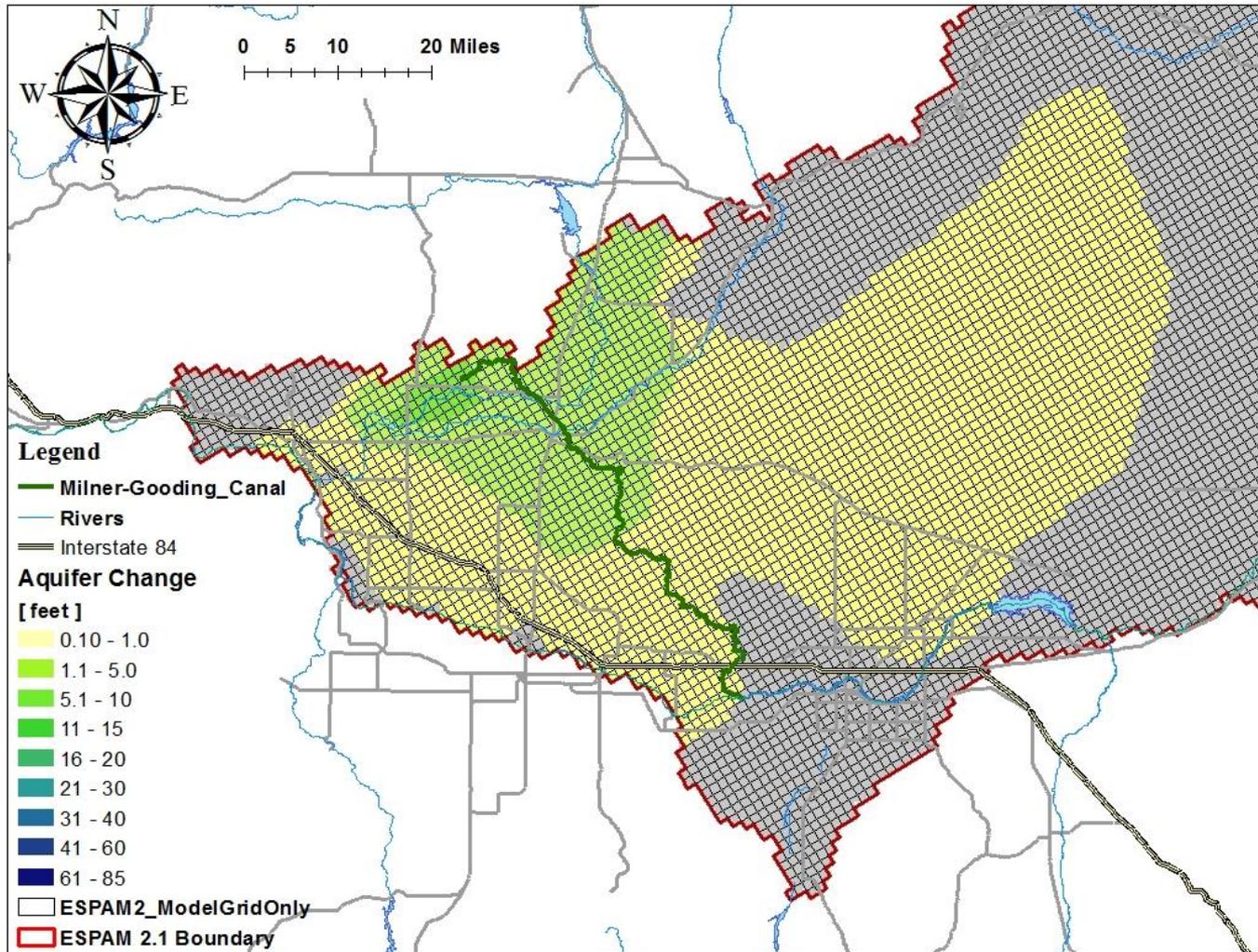
Modeled Impacts (Jan 1st, 2013)



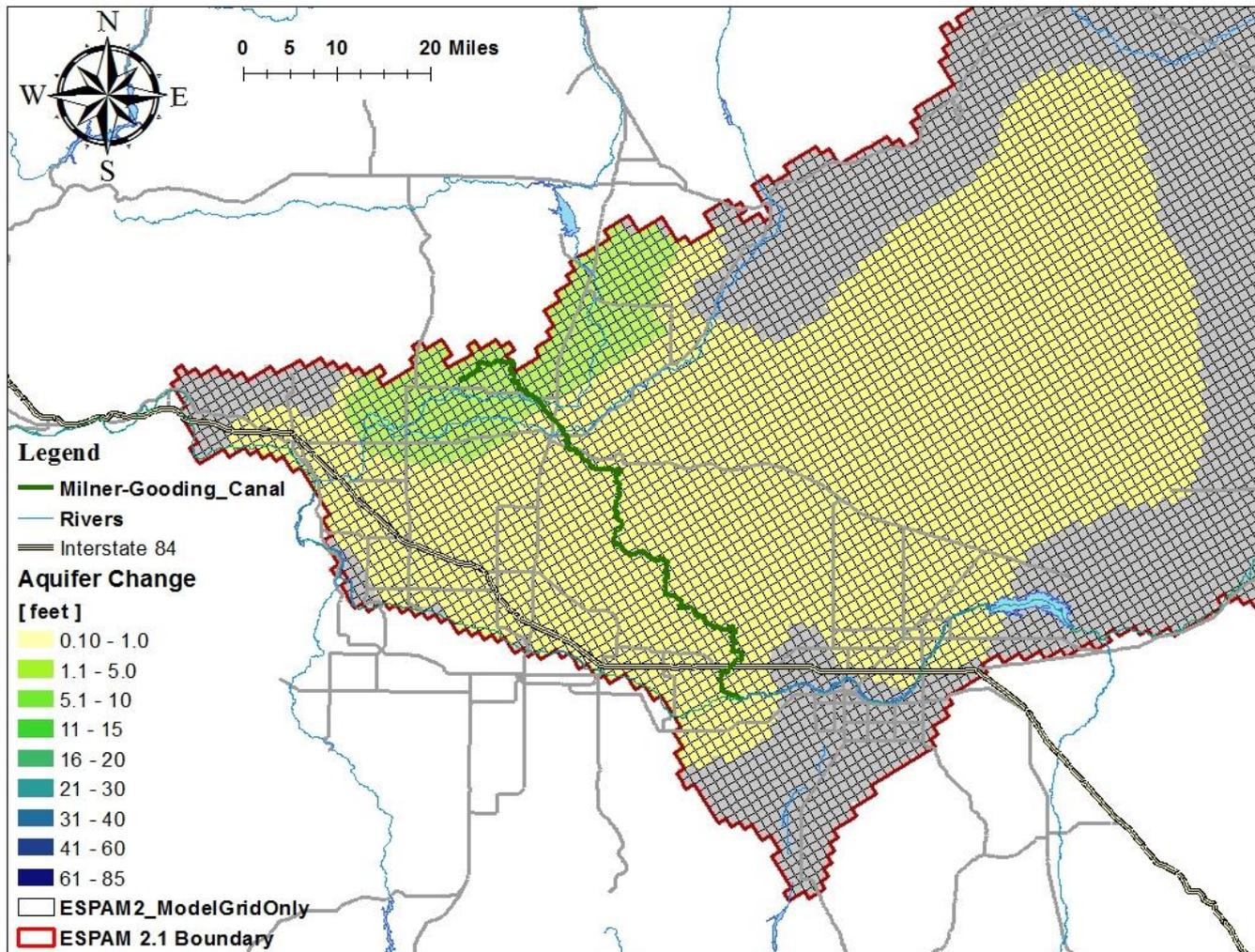
Modeled Impacts (Feb 1st, 2013)



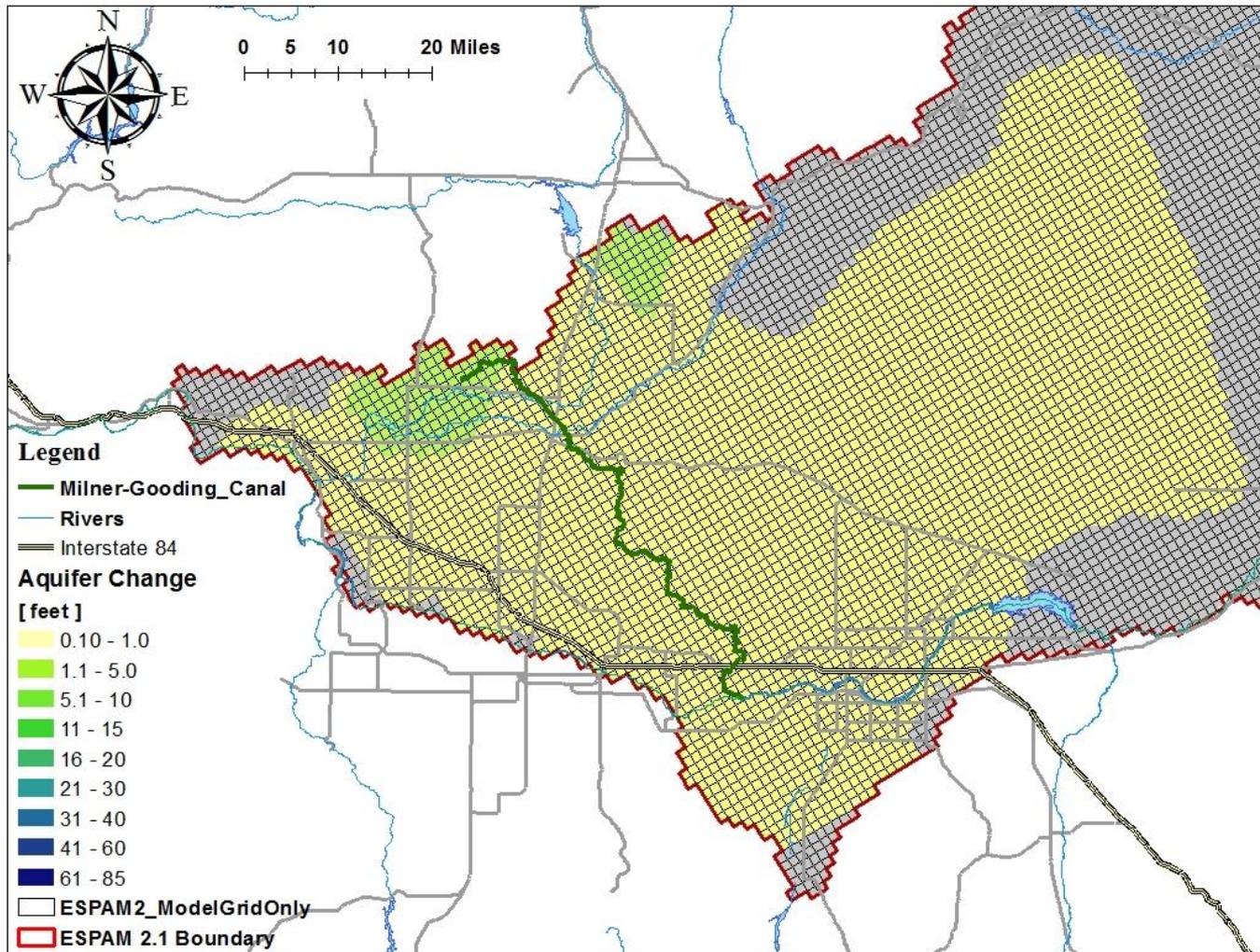
Modeled Impacts (Mar 1st, 2013)



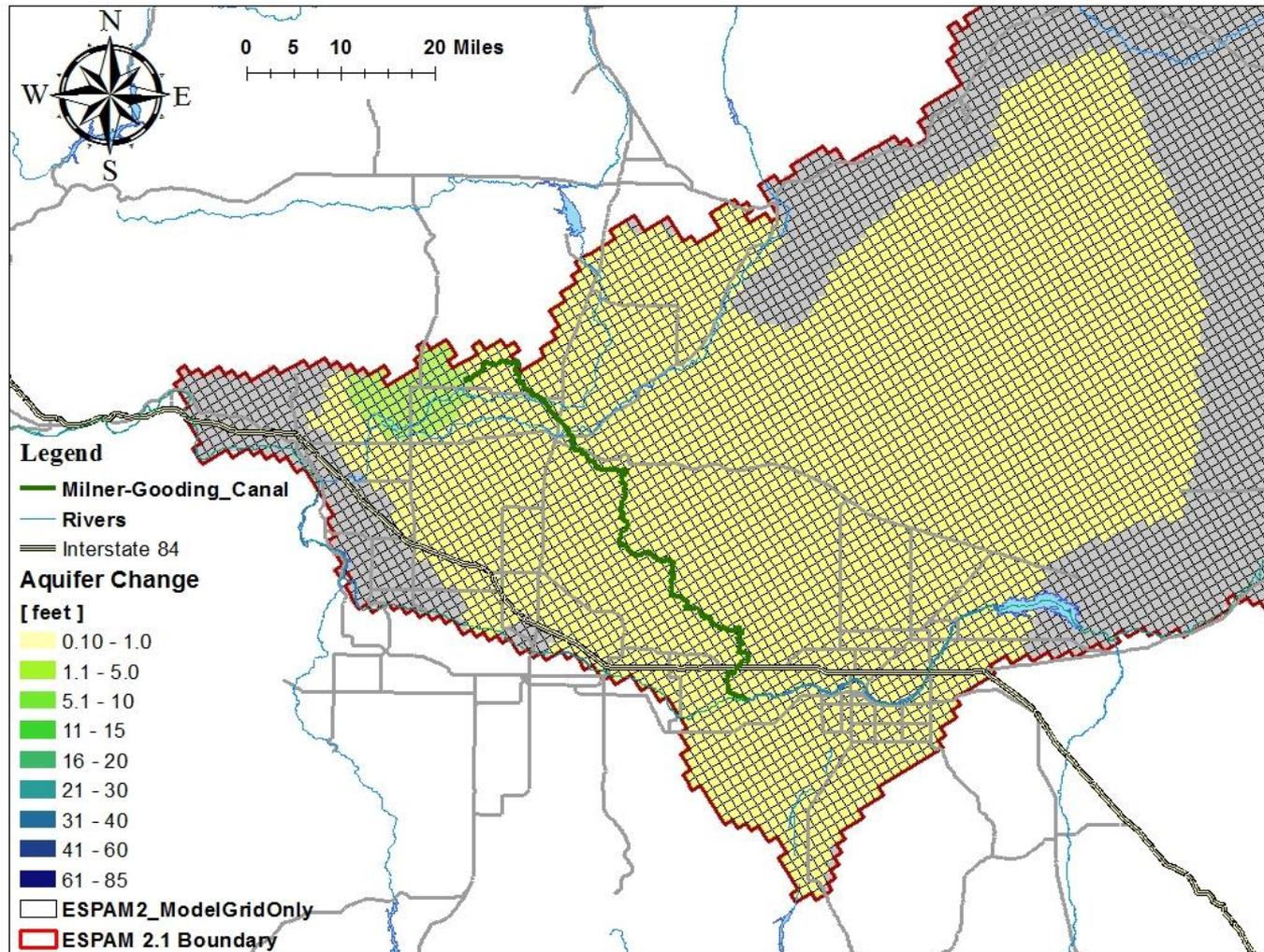
Modeled Impacts (July 1st, 2013)



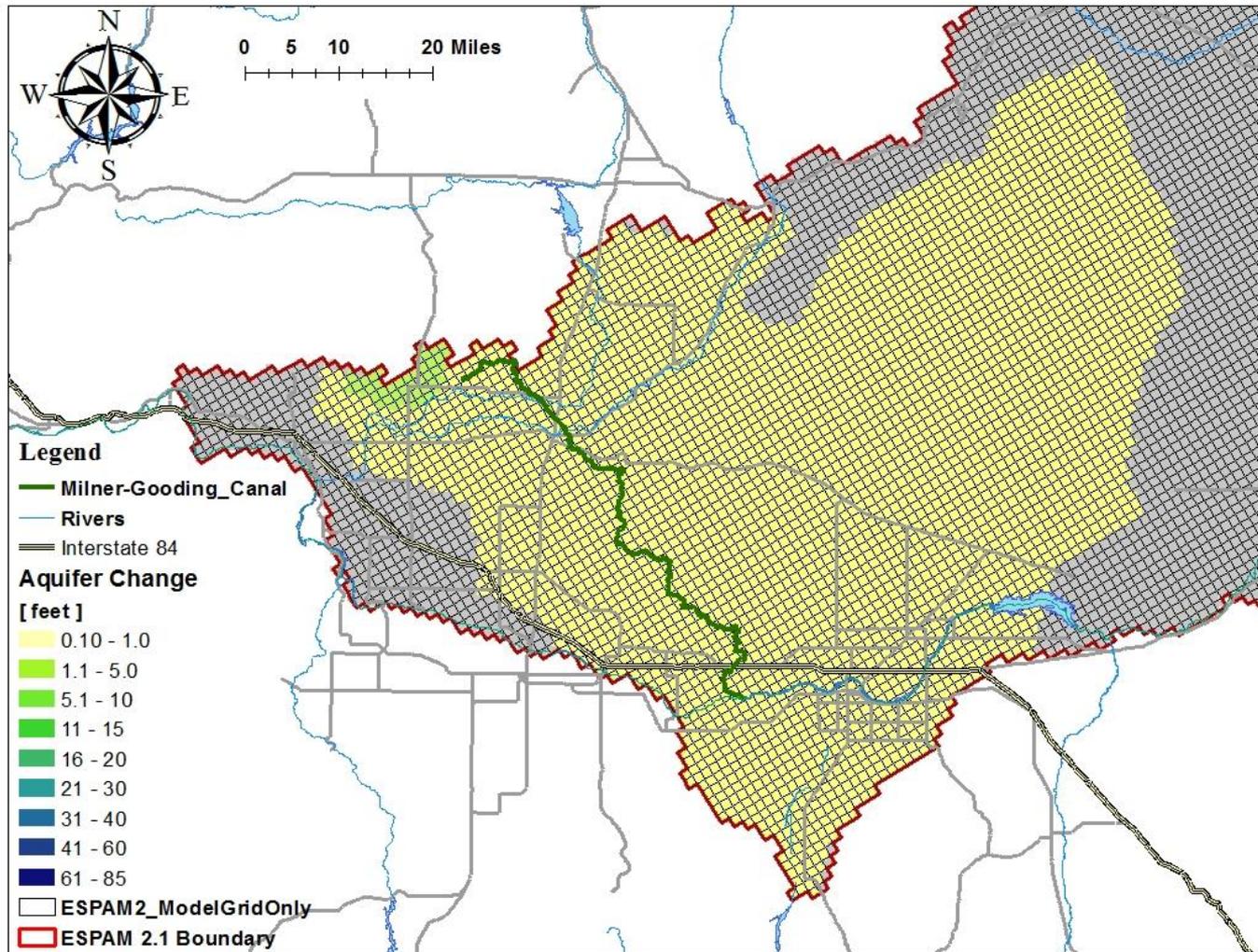
Modeled Impacts (Nov 1st, 2013)



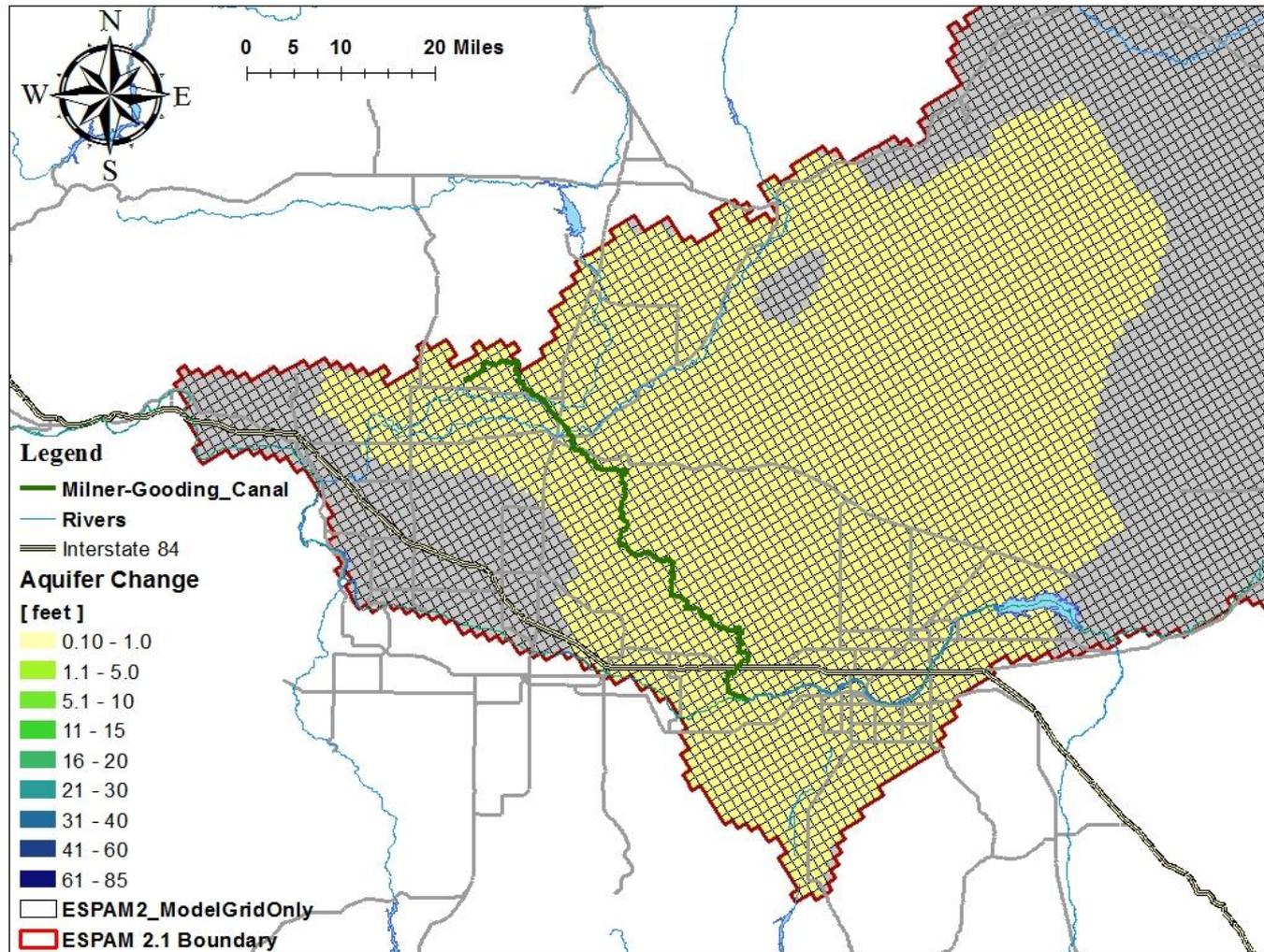
Modeled Impacts (Nov 1st, 2014)



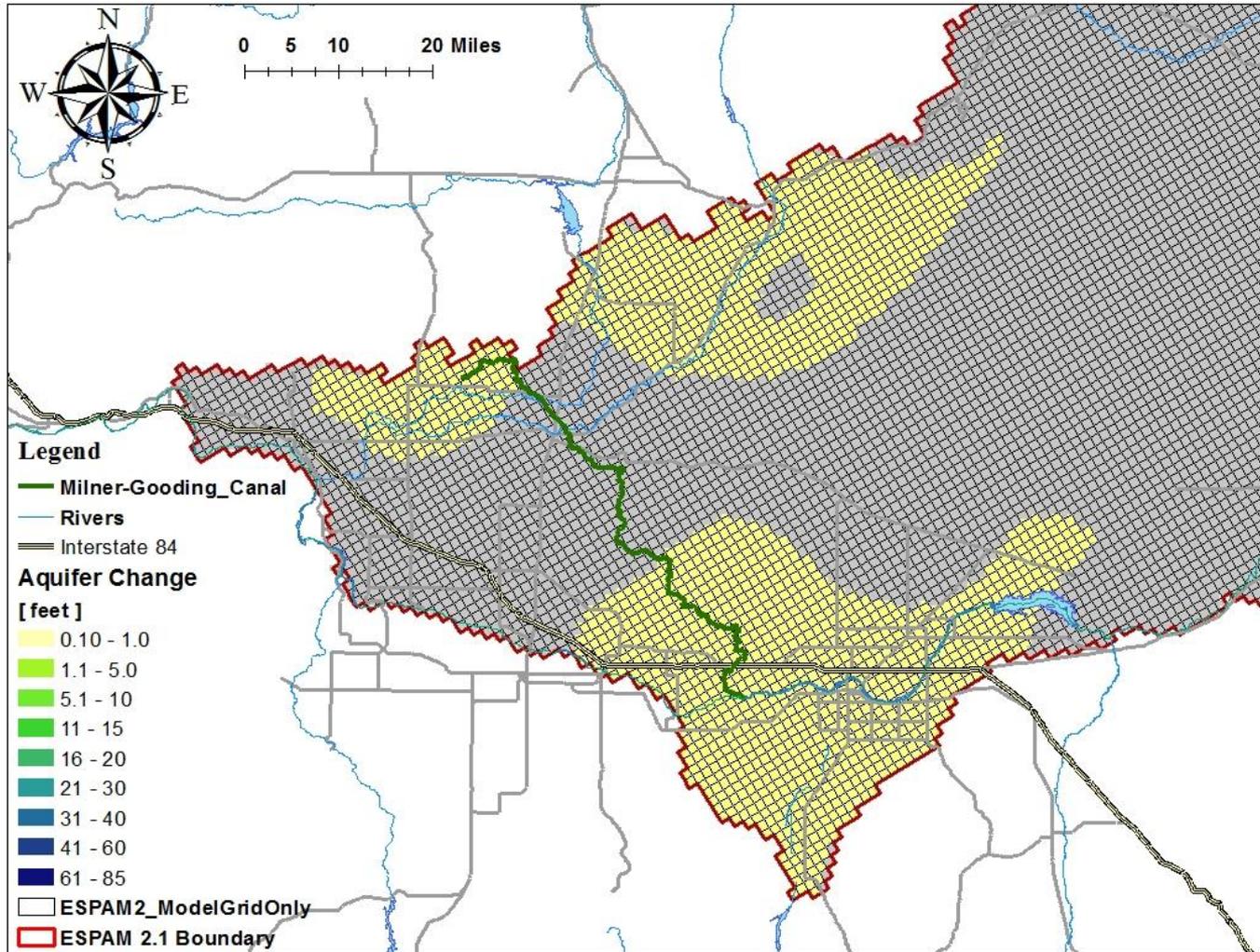
Modeled Impacts (Nov 1st, 2015)



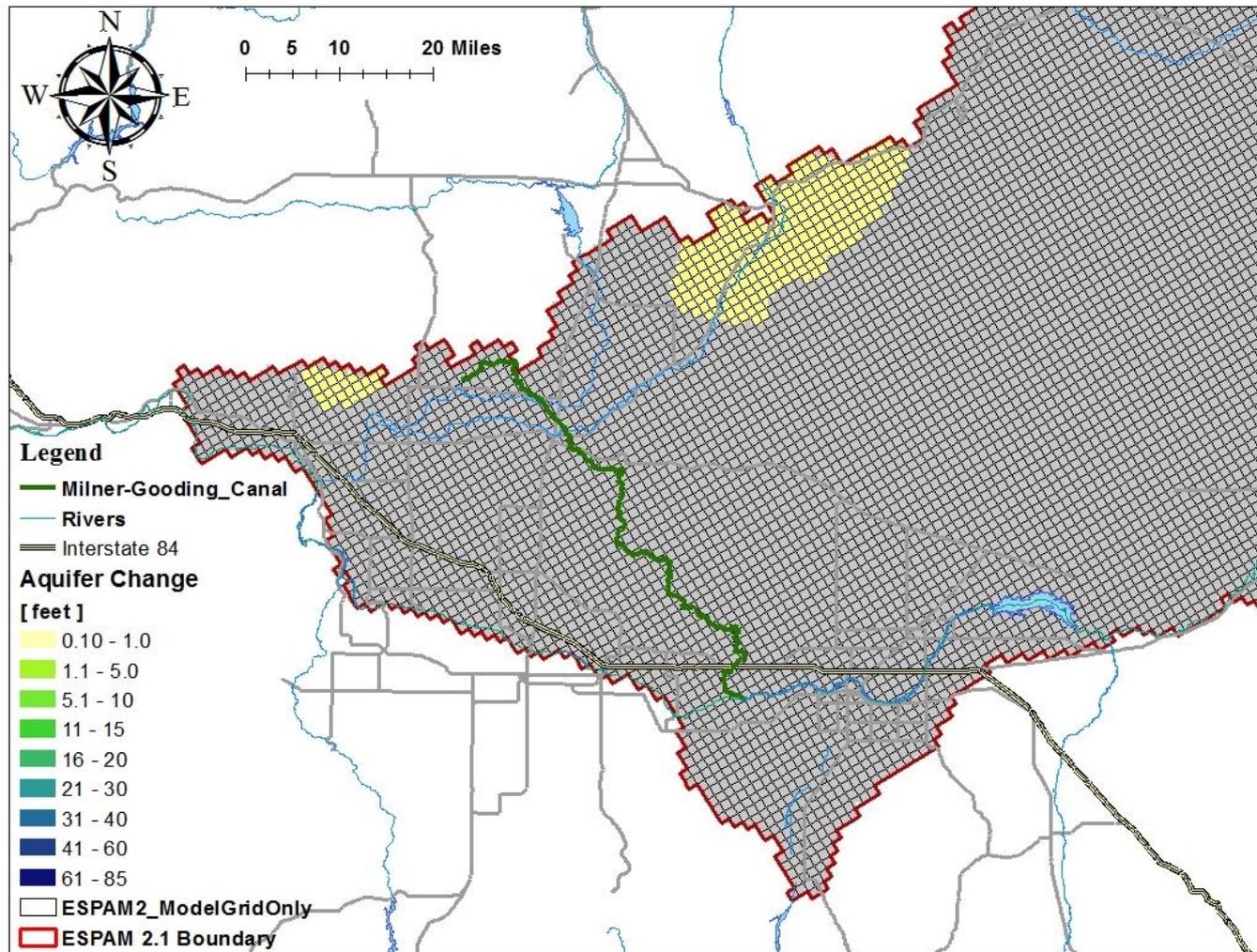
Modeled Impacts (Nov 1st, 2016)



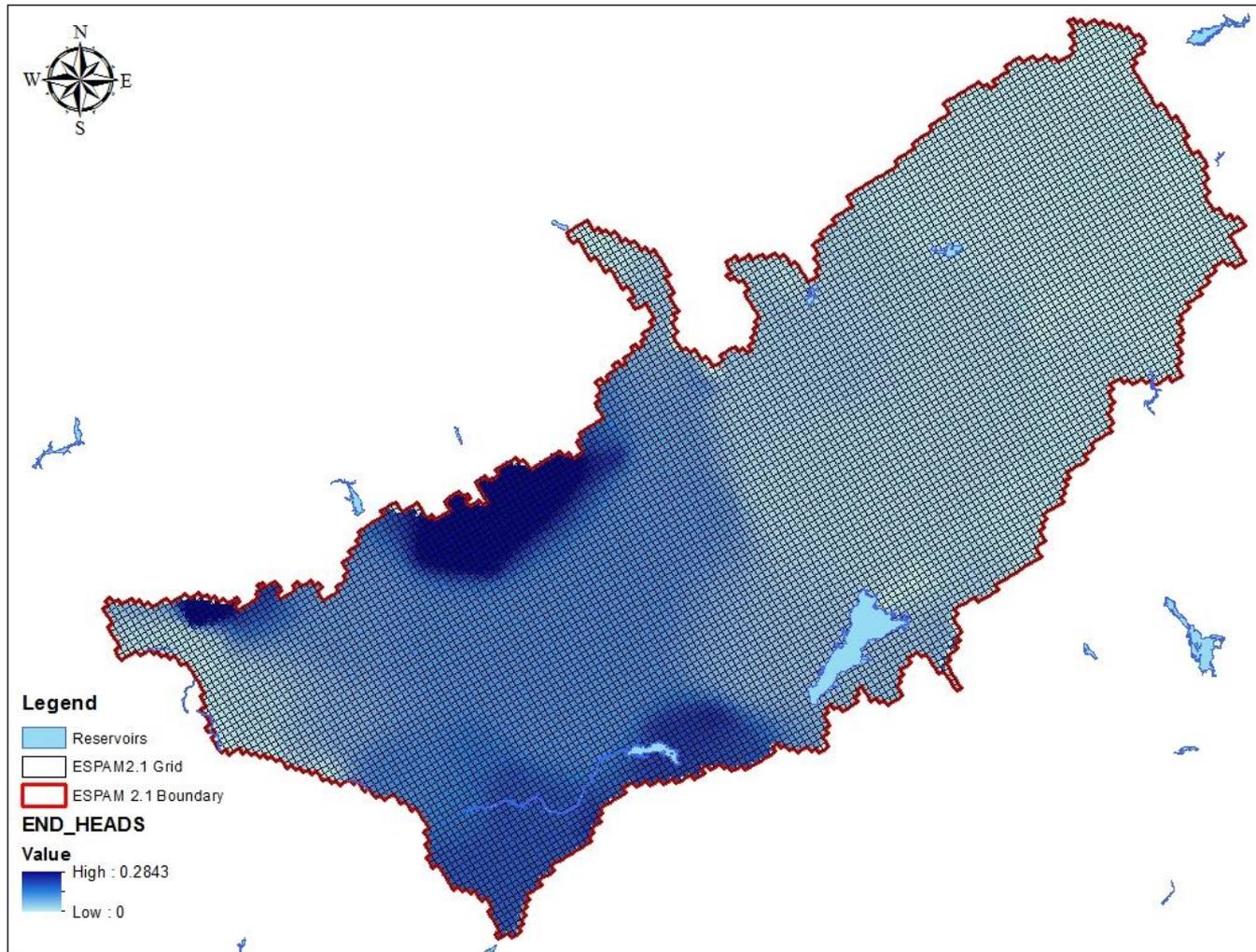
Modeled Impacts (Nov 1st, 2017)



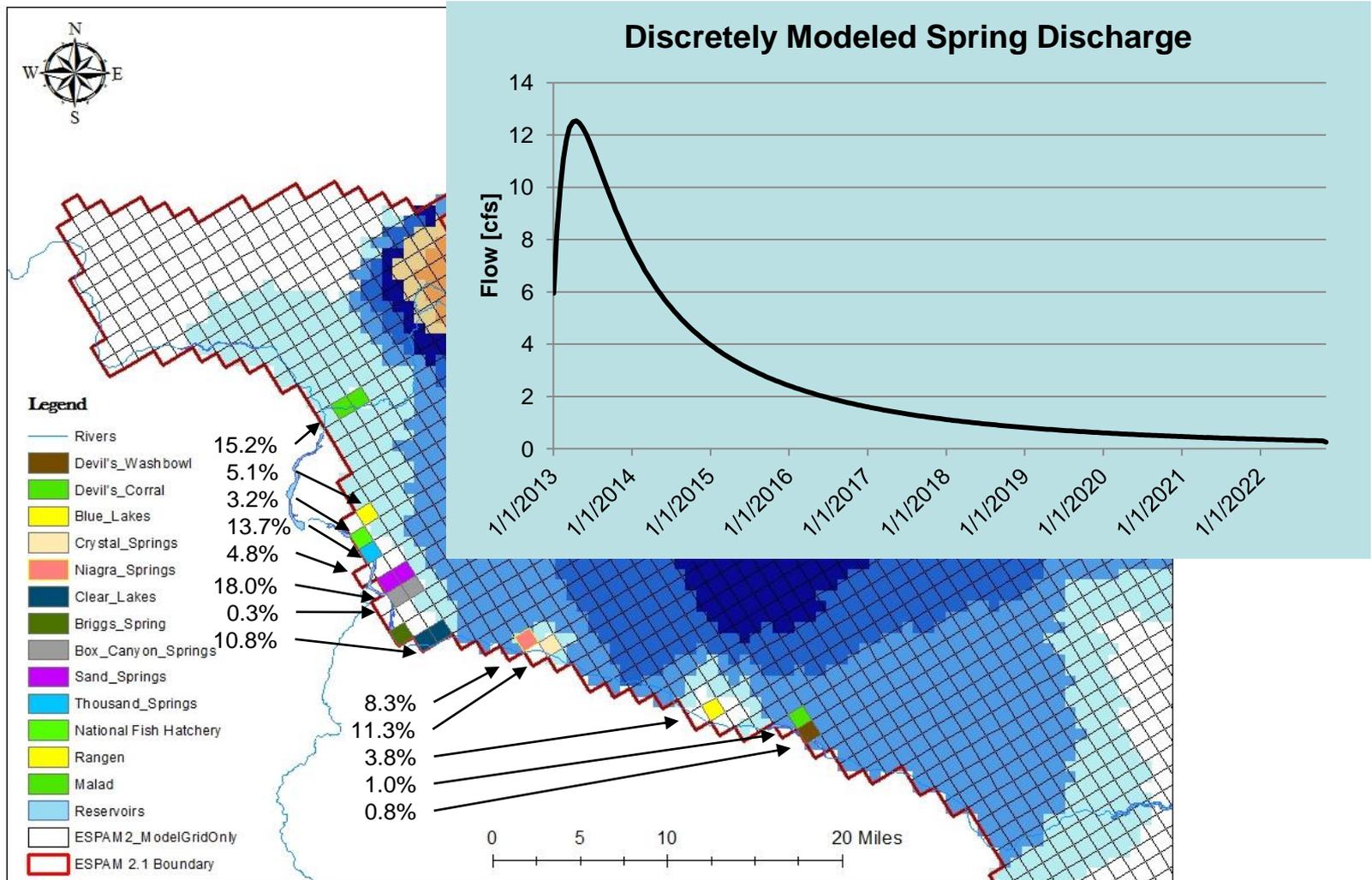
Modeled Impacts (Nov 1st, 2022)



Modeled Impacts (Nov 1st, 2022)



AB Spring Discharge 18,400 ac-ft / 10yr



Spring	Maximum Discharge Date	Max Discharge [cfs]	Discharge 2008 [cfs]	Total 10-yr [ac-ft]
Malad	Late June	1.6	1003	15.2%
Three Springs	Late May	0.5	--	3.8%
Rangen	Early May	0.6	13	5.1%
National Fish Hatchery	Early May	0.4	155	3.2%
Thousand Springs	Mid April	1.7	533	13.7%
Sand Springs	Early April	0.7	45	4.8%
Box Canyon Springs	Late March	2.5	320	18.0%
Briggs Springs	Late March	0.0	95	0.3%
Clear Lakes Springs	Late March	1.5	407	10.8%
Niagara Springs	Late March	1.2	216	8.3%
Crystal Springs	Late March	1.6	432	11.3%
Blue Lakes	Late June	0.4	177	3.8%
Devils Corral	Late July	0.1	33.8	1.0%
Devils Washbowl	Late July	0.0	5.8	0.8%