

Discovering downriver discharge in the Deshka watershed for habitat modeling and protection

Mat-Su Salmon Science Symposium 2018

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U.S. Fish and Wildlife Service



Talk Outline

- Hydrology Goals
- Deshka Watershed & Water Reservations
- Hydrology Methods
- Initial Results
- Next Steps

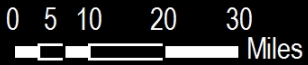
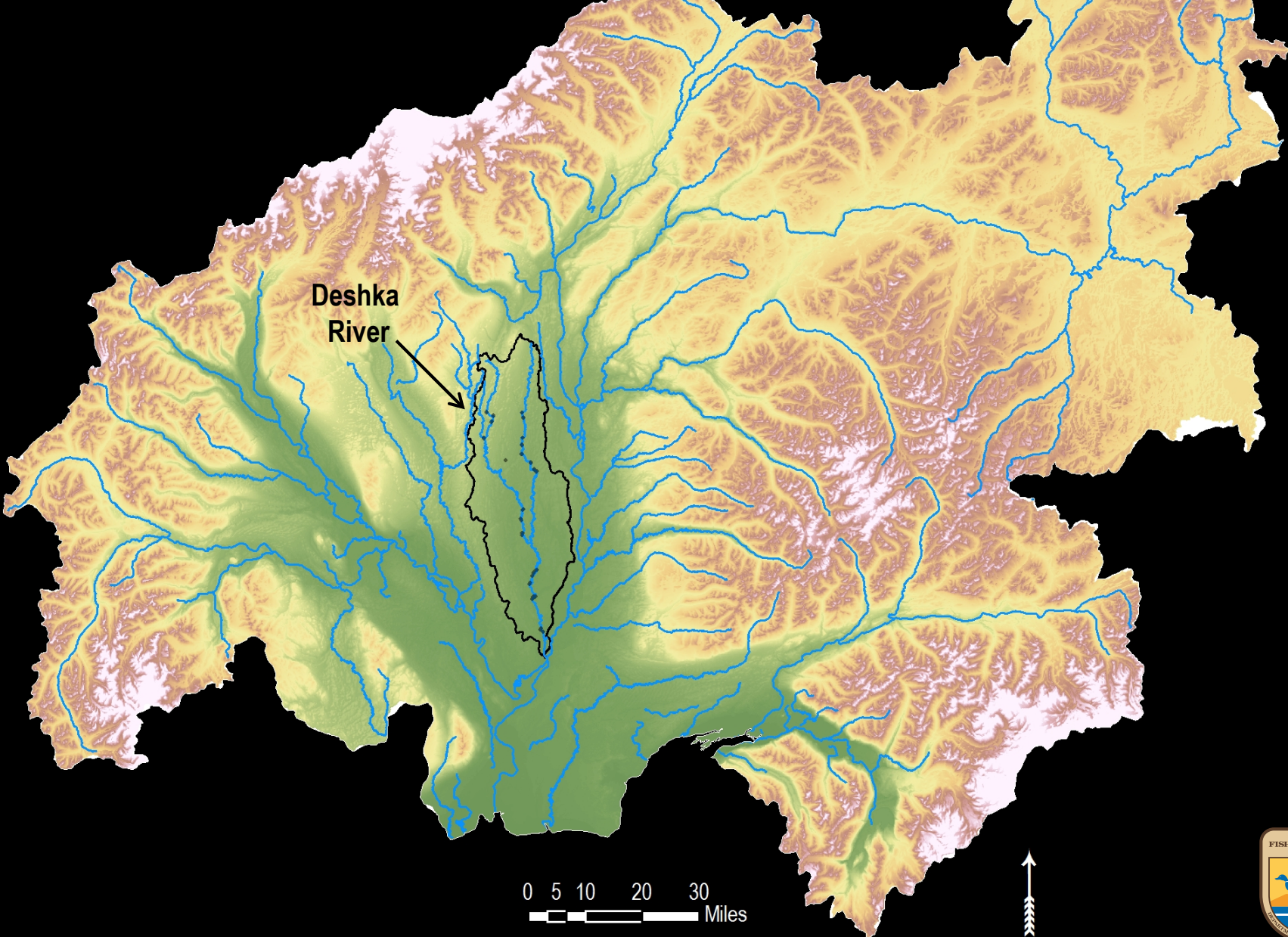


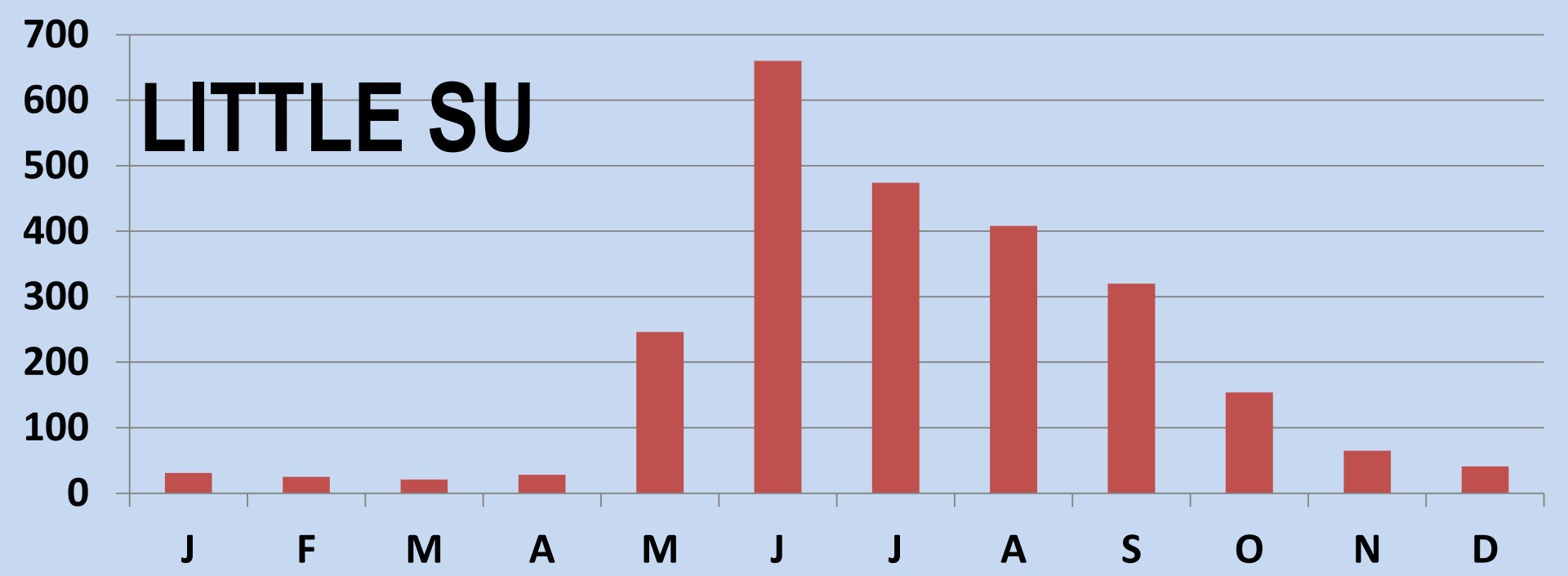
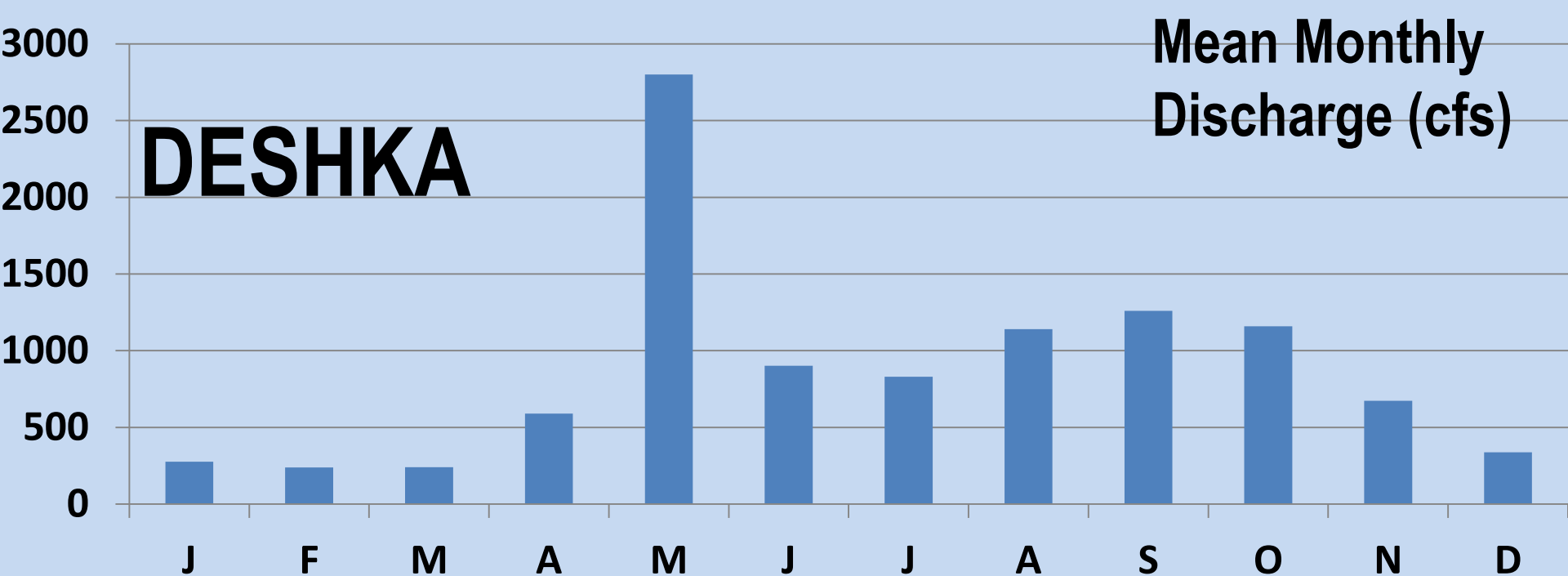
Hydrology Goals

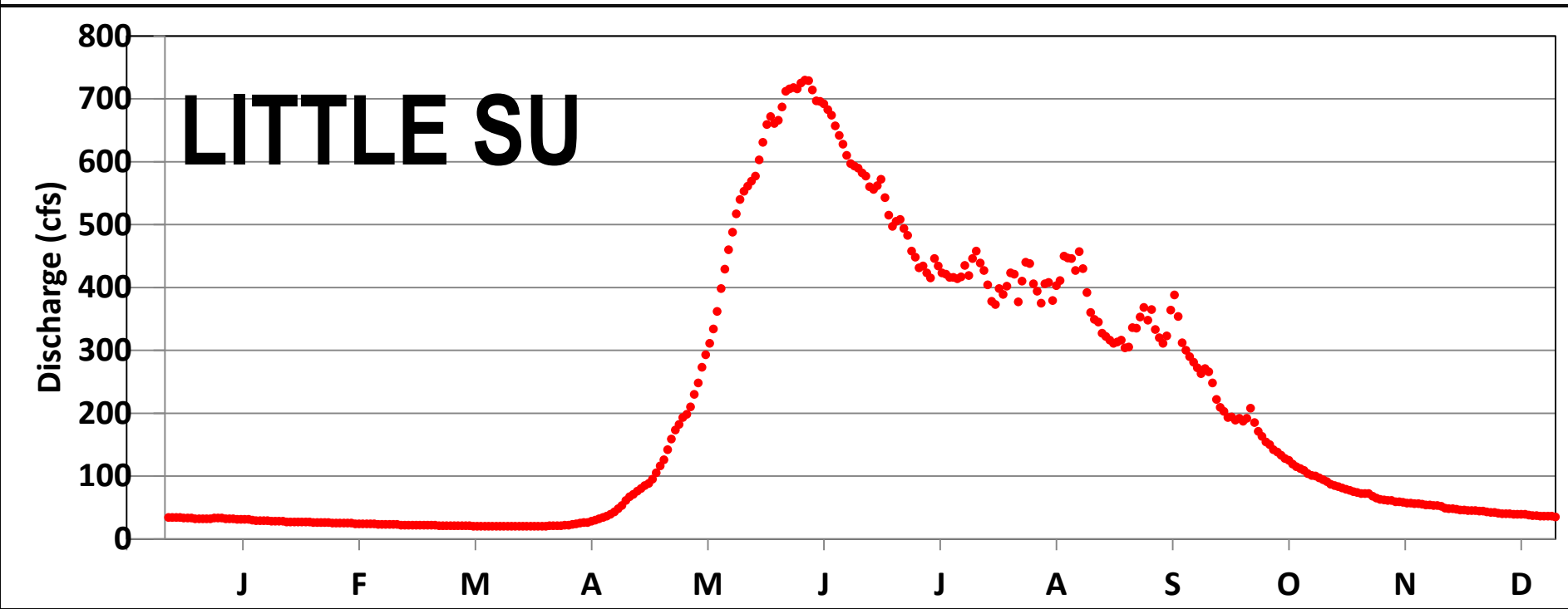
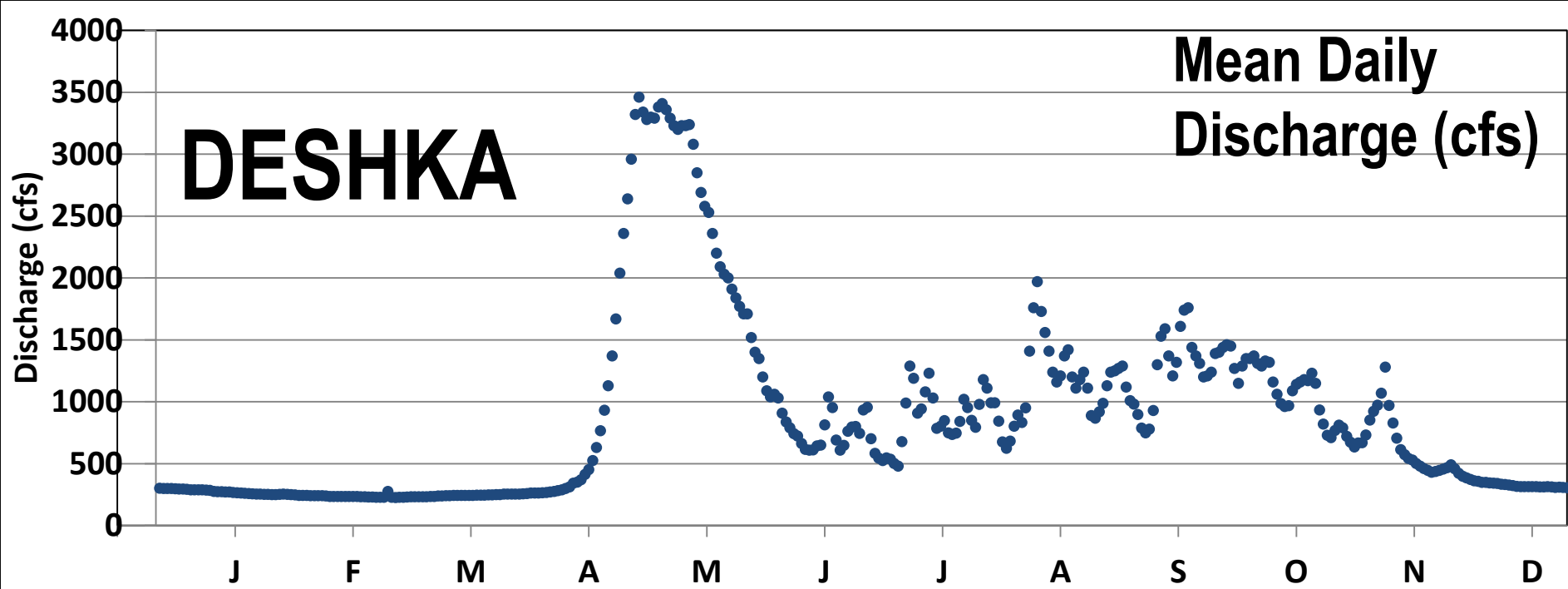
1. Flow input for stream temperature model
2. Apply for instream flow water reservations



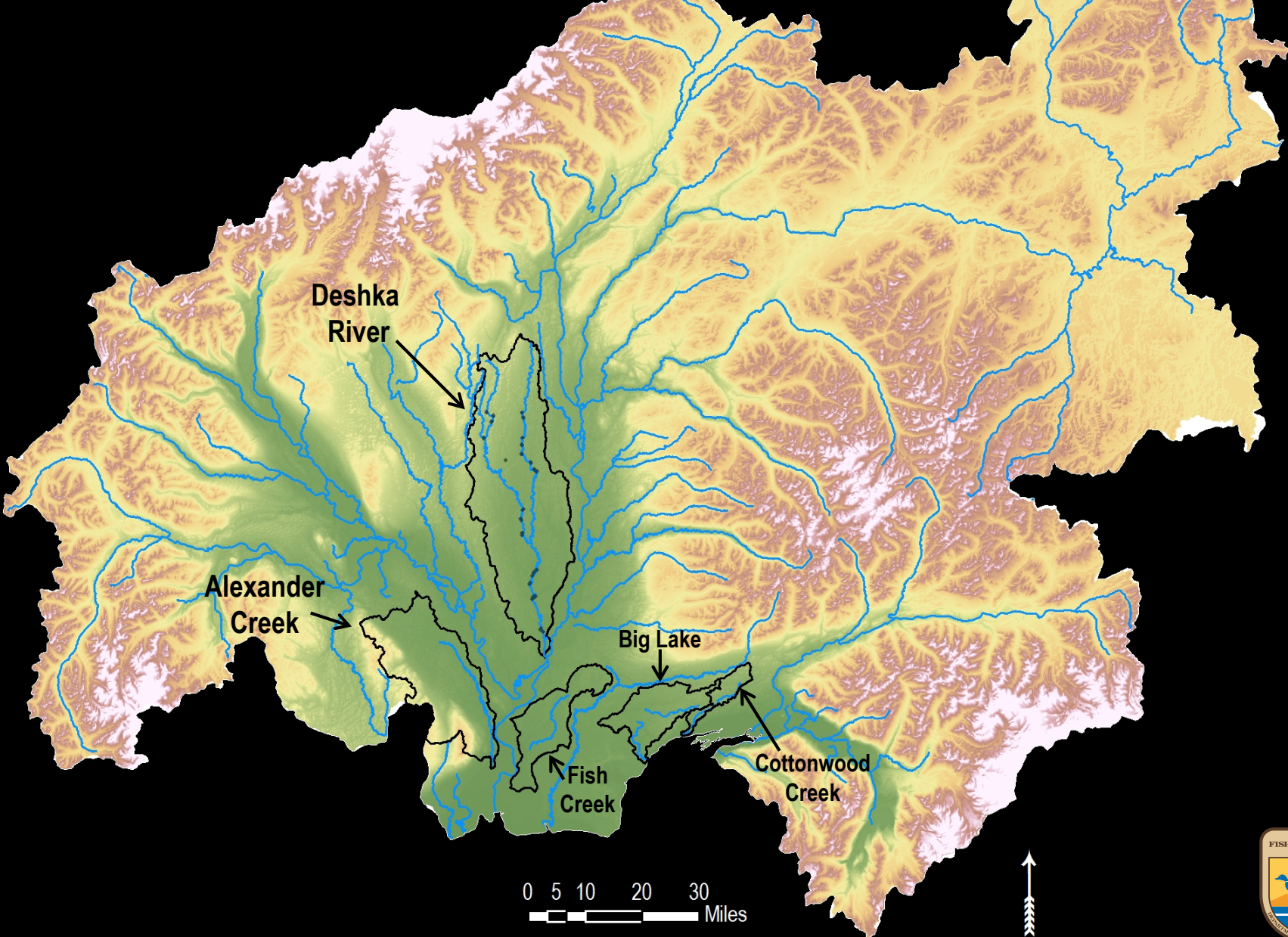
Deshka Watershed



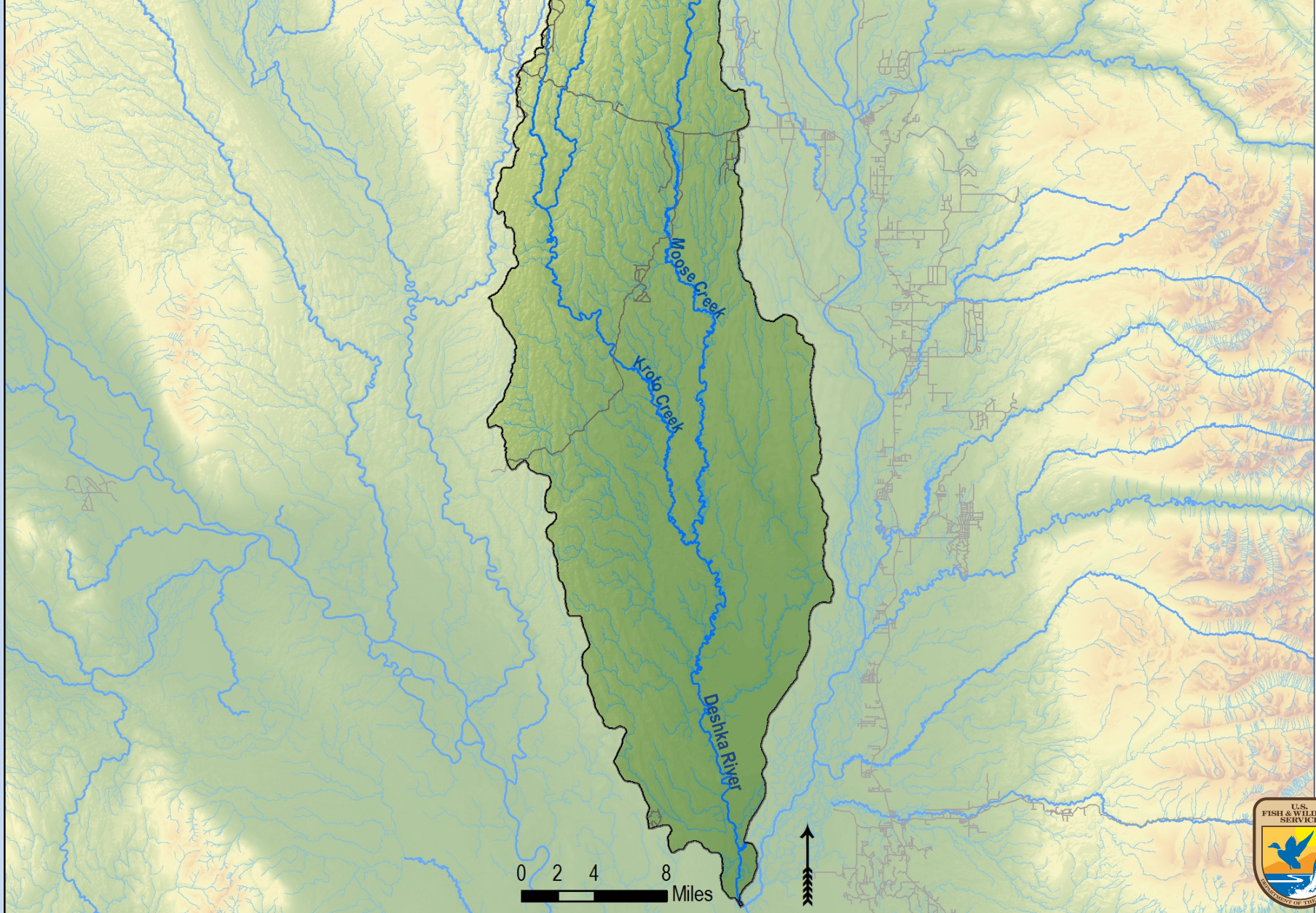




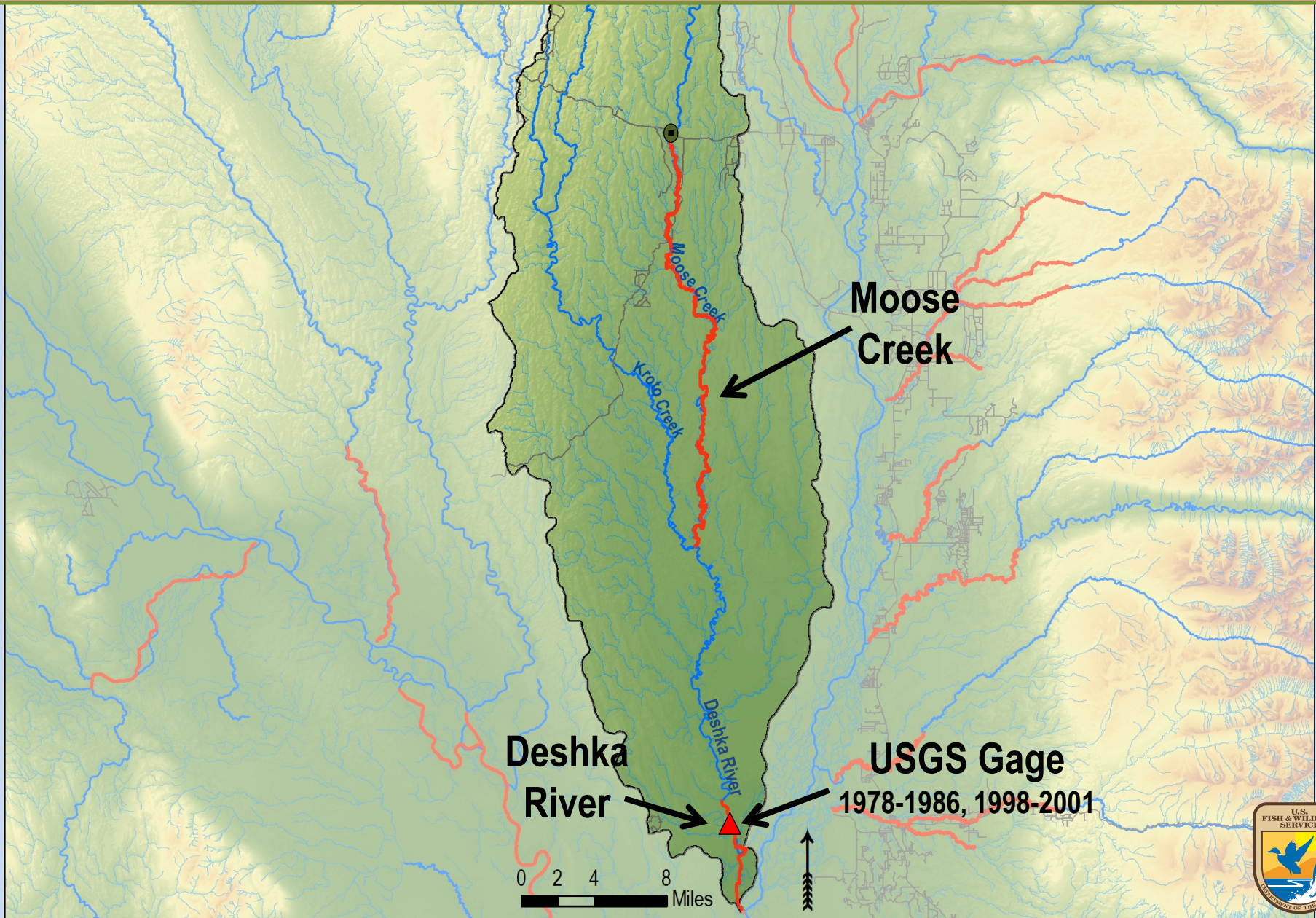
Deshka Watershed



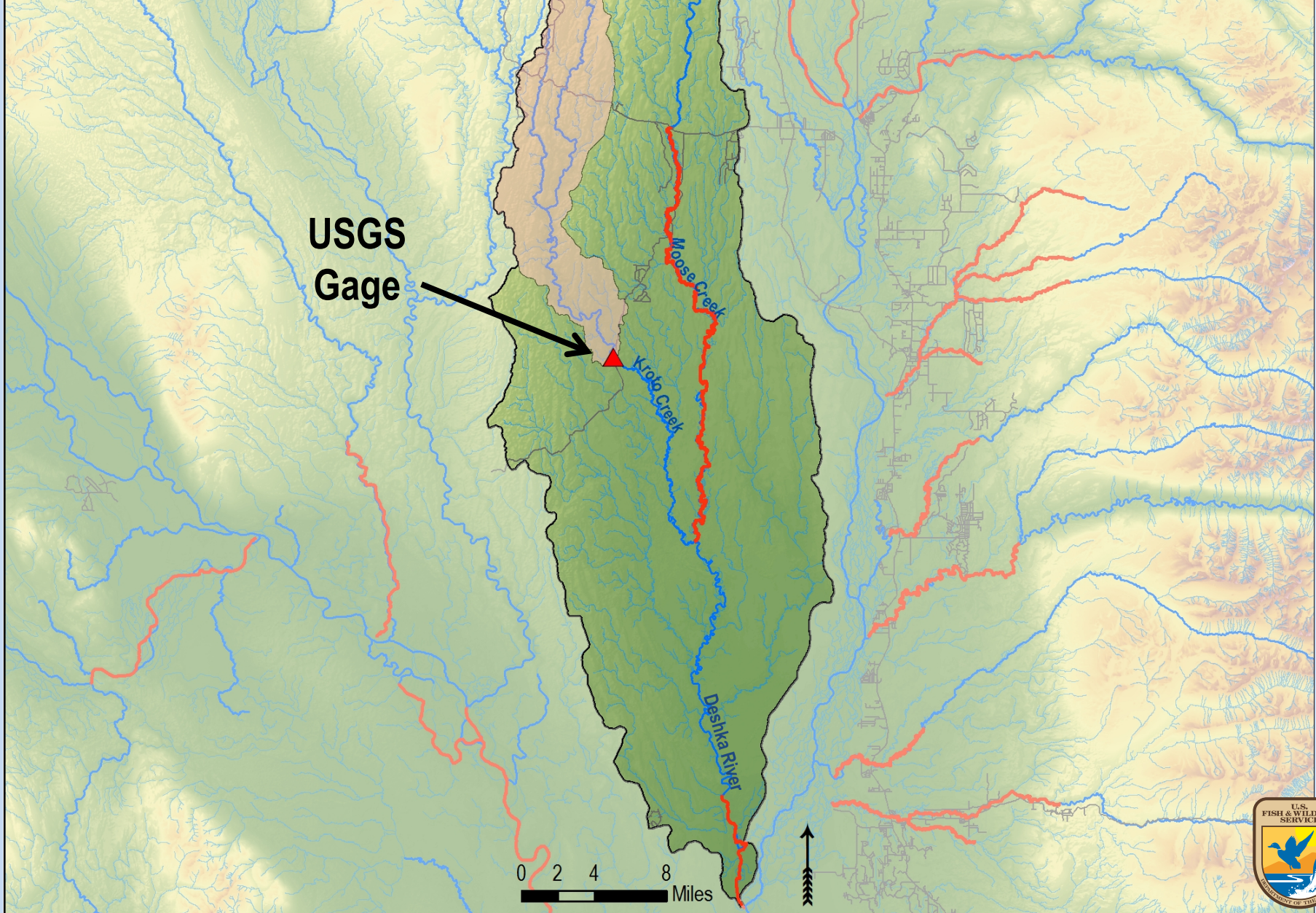
Deshka Watershed



Water Reservations



USGS Gage

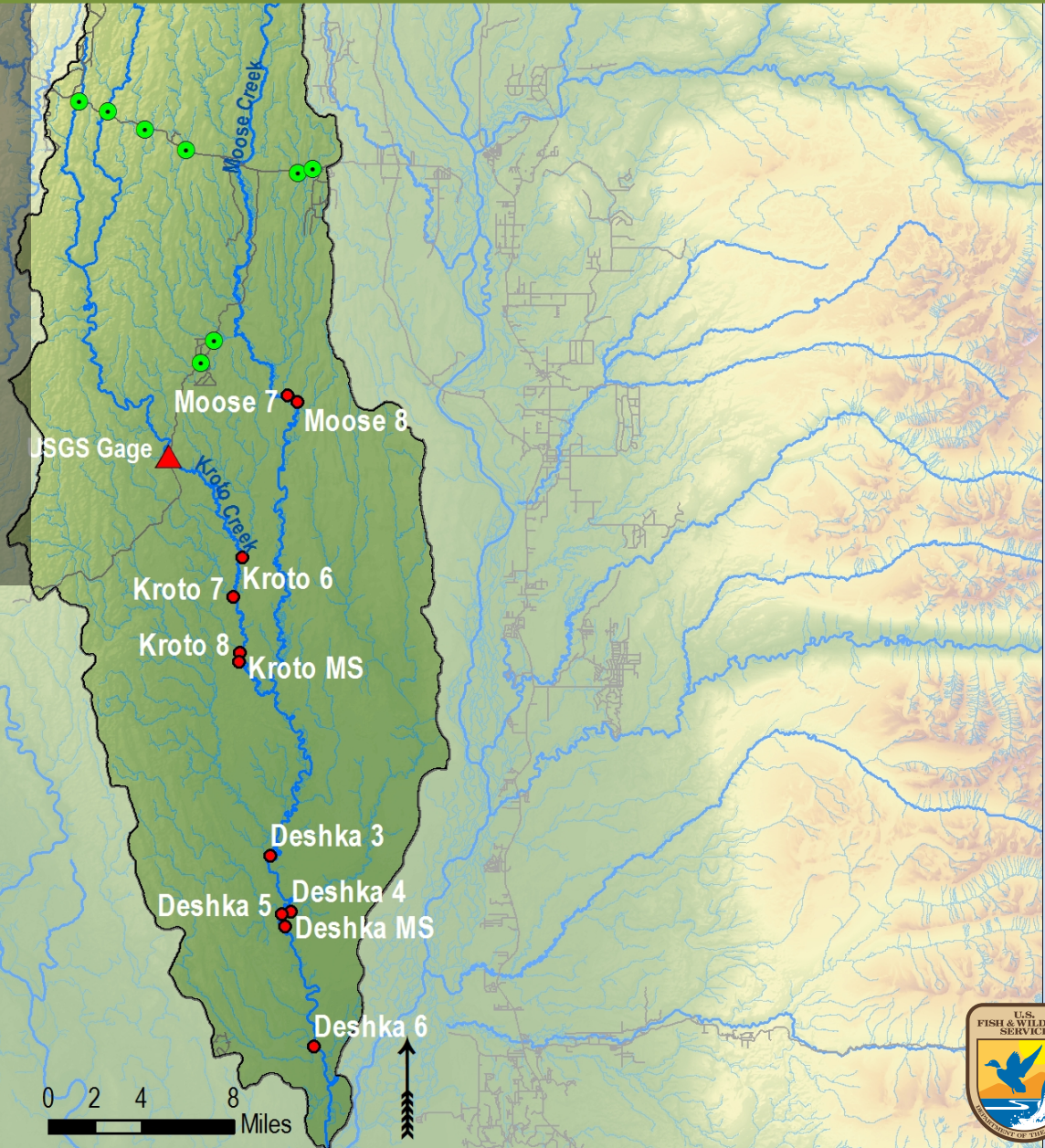


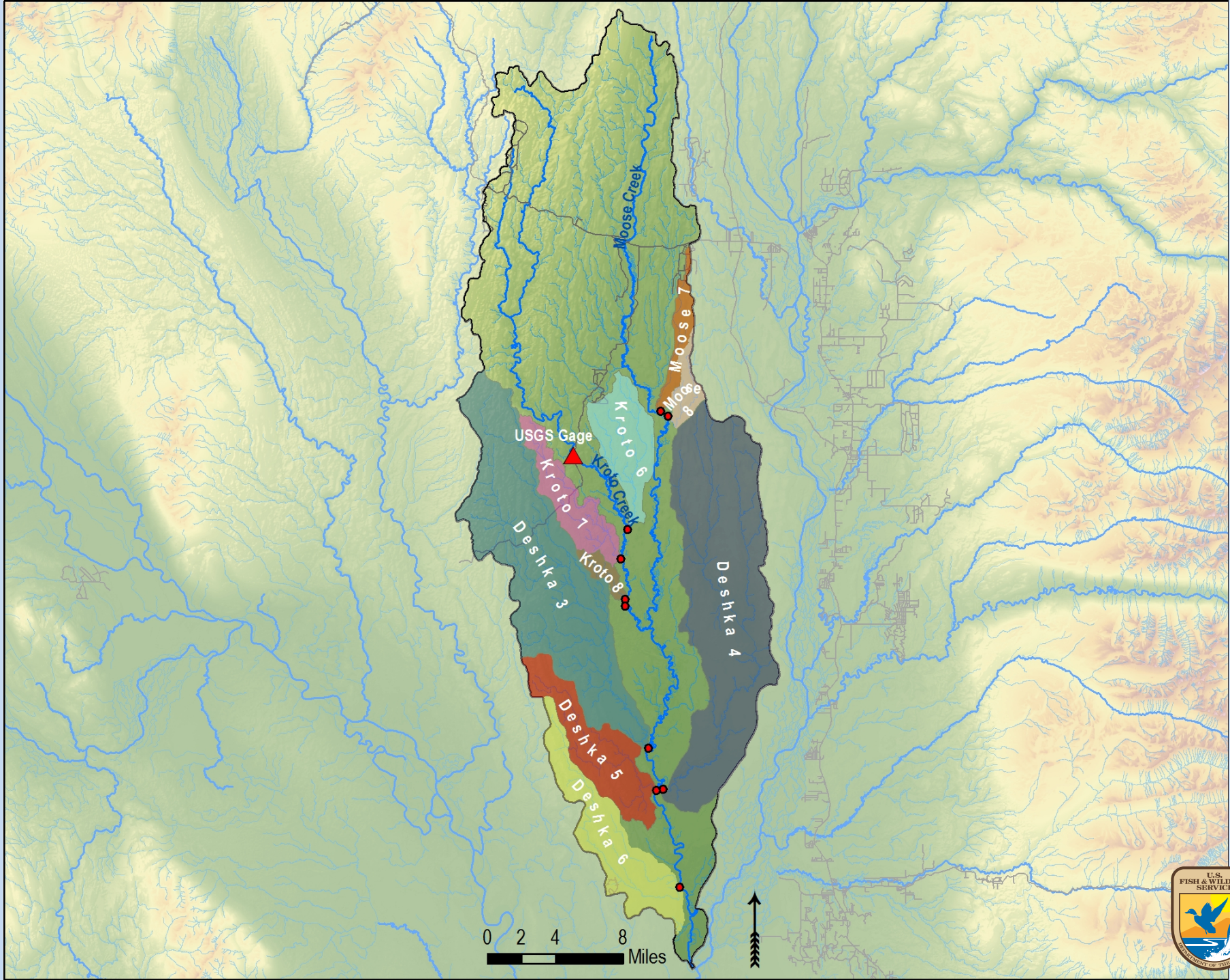
Methods

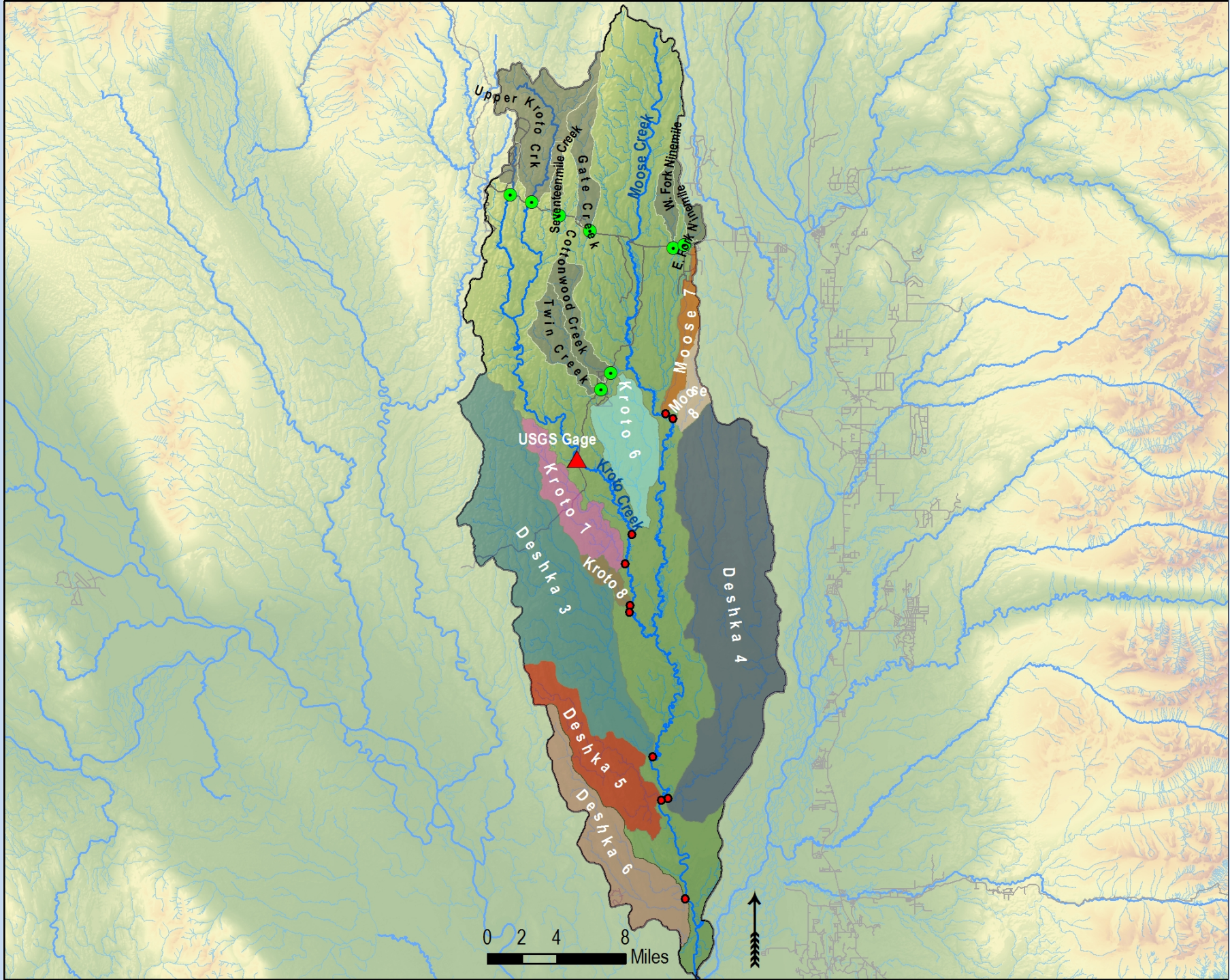
Measurement Sites

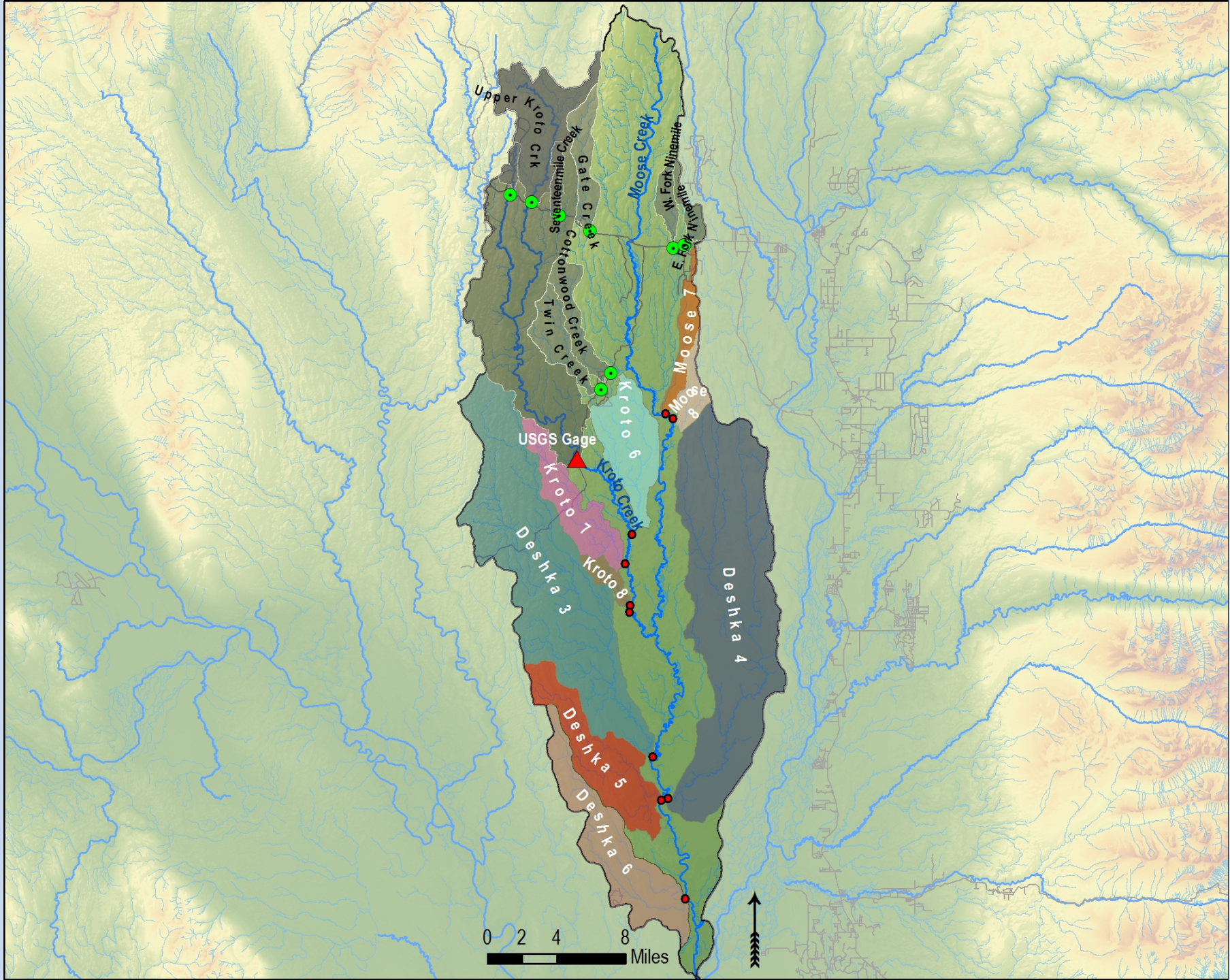
Downstream of Oilwell Road

- 9 Tributaries
- 1 Kroto Creek
- 1 Deshka River









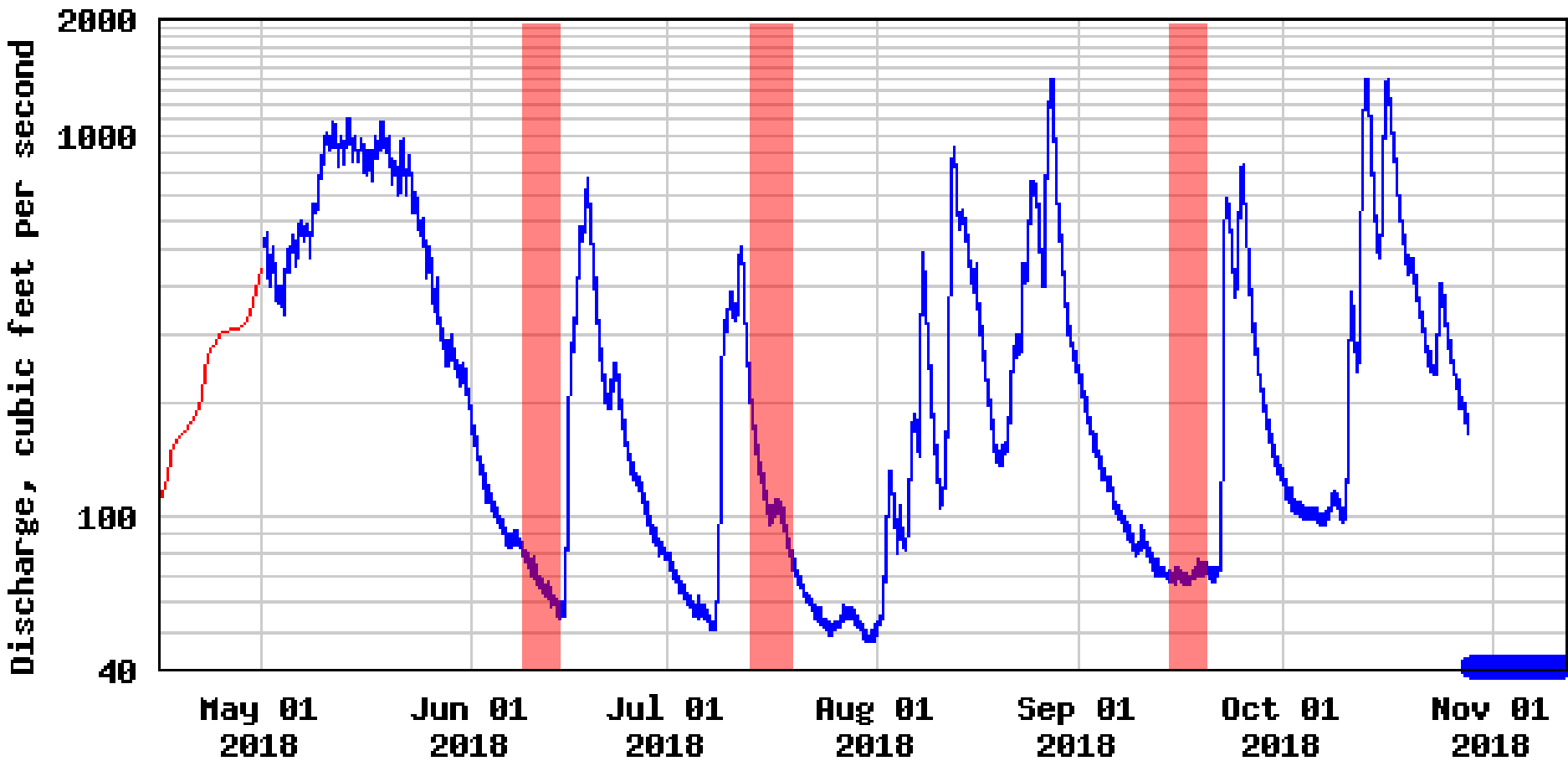
Methods

- 10 discharge measurements per site
- Wading rod discharge
(Turnipseed and Sauer USGS Methods 2010)
- Acoustic Doppler Current Profiler (ADCP)
- Correlate to USGS gage continuous data set
- Develop weekly flows statistics for water reservation and model input



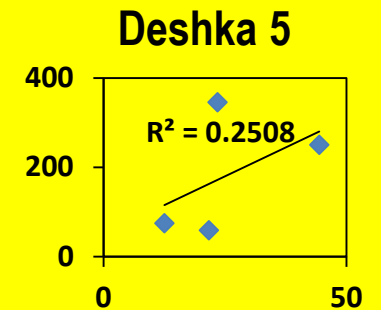
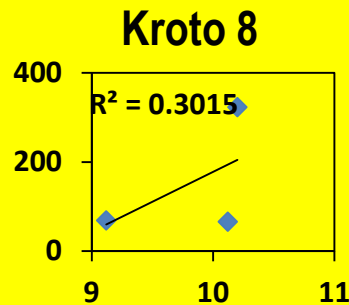
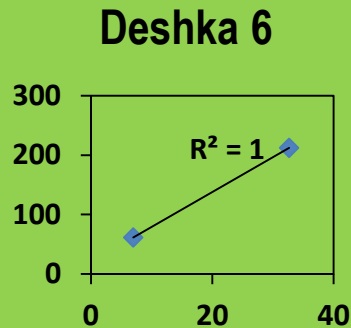
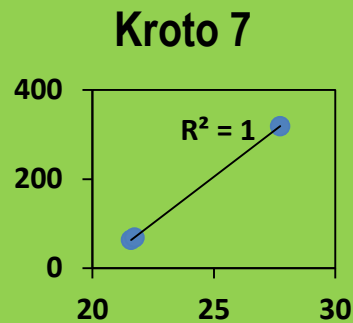
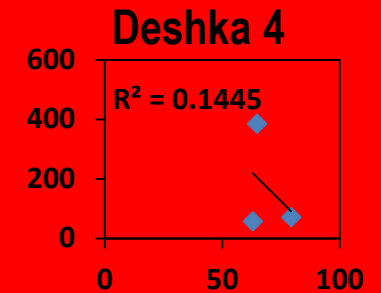
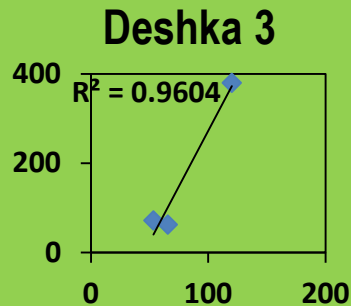
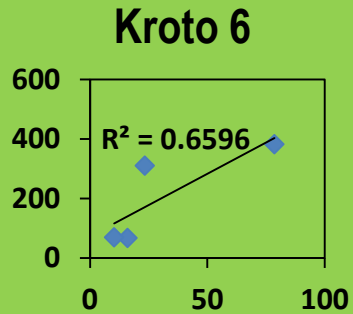
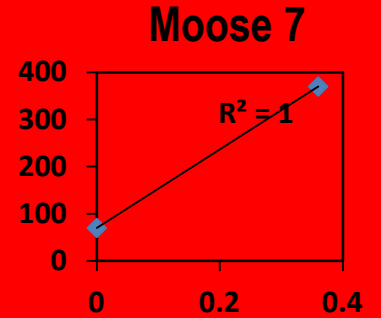
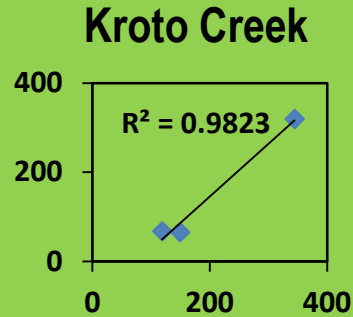
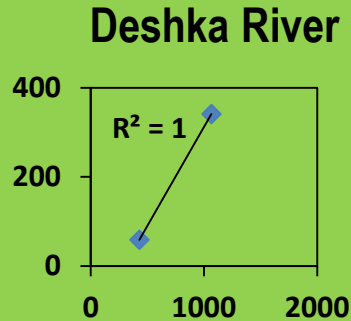
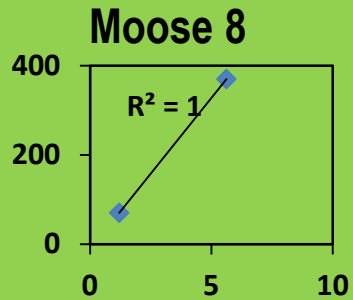
Initial Results

USGS 15294080 KROTO CREEK AT OILWELL ROAD NEAR TRAPPER CREEK AK



Initial Results

- 31 measurements at 11 sites



Moose 7



Deshka 4 (Trapper Creek)



Next Steps

- Address measurement issues at 4 sites
- Start measurement on Moose Creek
- Incorporate ADF&G Discharge Data
- Correlate flow to watershed characteristics
 - ~20 sub catchments
 - Drainage area ratio method
 - Flow per unit area



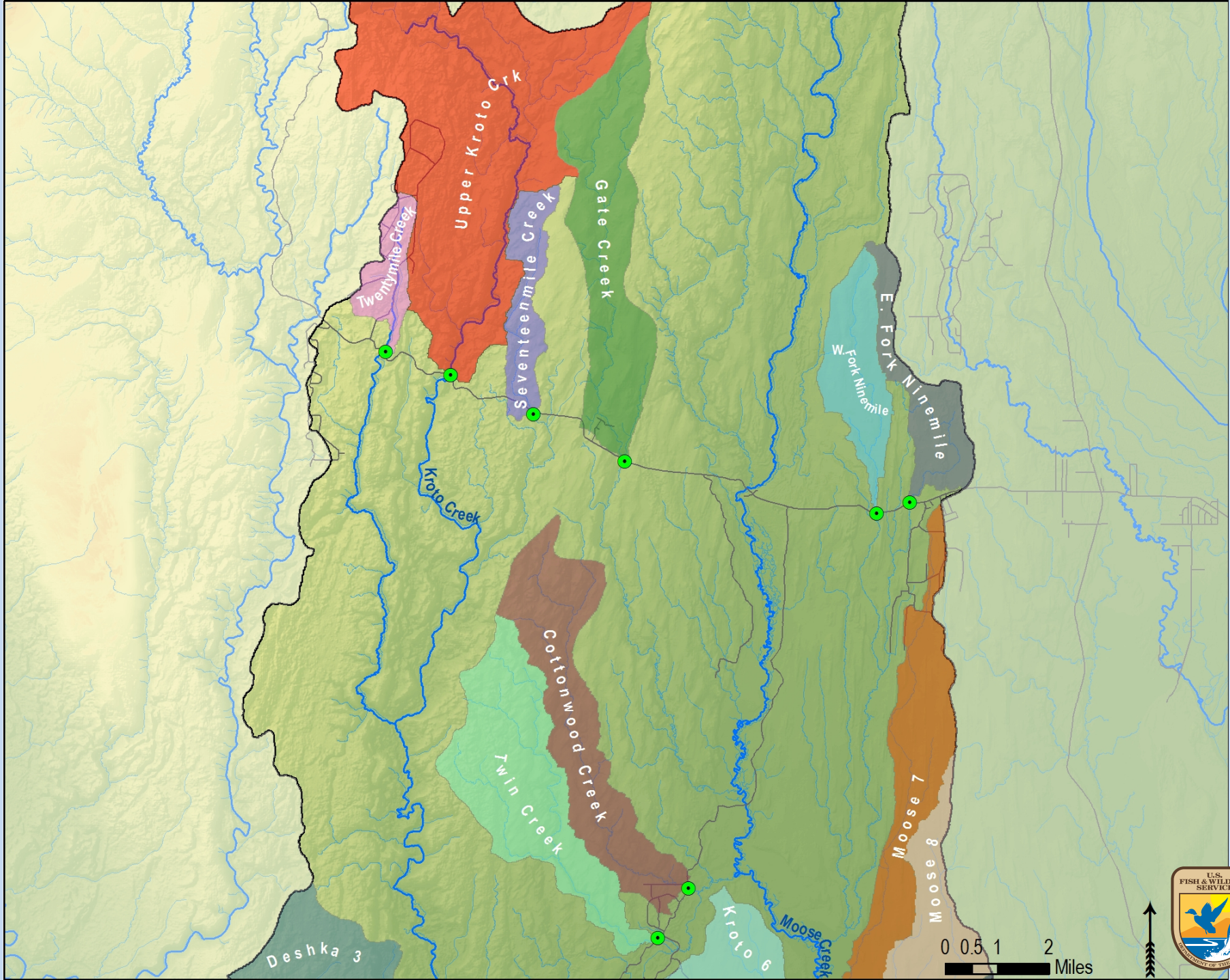


Questions? Hold Please!

References:

Turnipseed, D.P., and Sauer, V.B., 2010, Discharge measurements at gaging stations: U.S. Geological Survey Techniques and Methods book 3, chap. A8, 87 pt <http://pubs.usgs.gov/tm/tm3-a8/>.



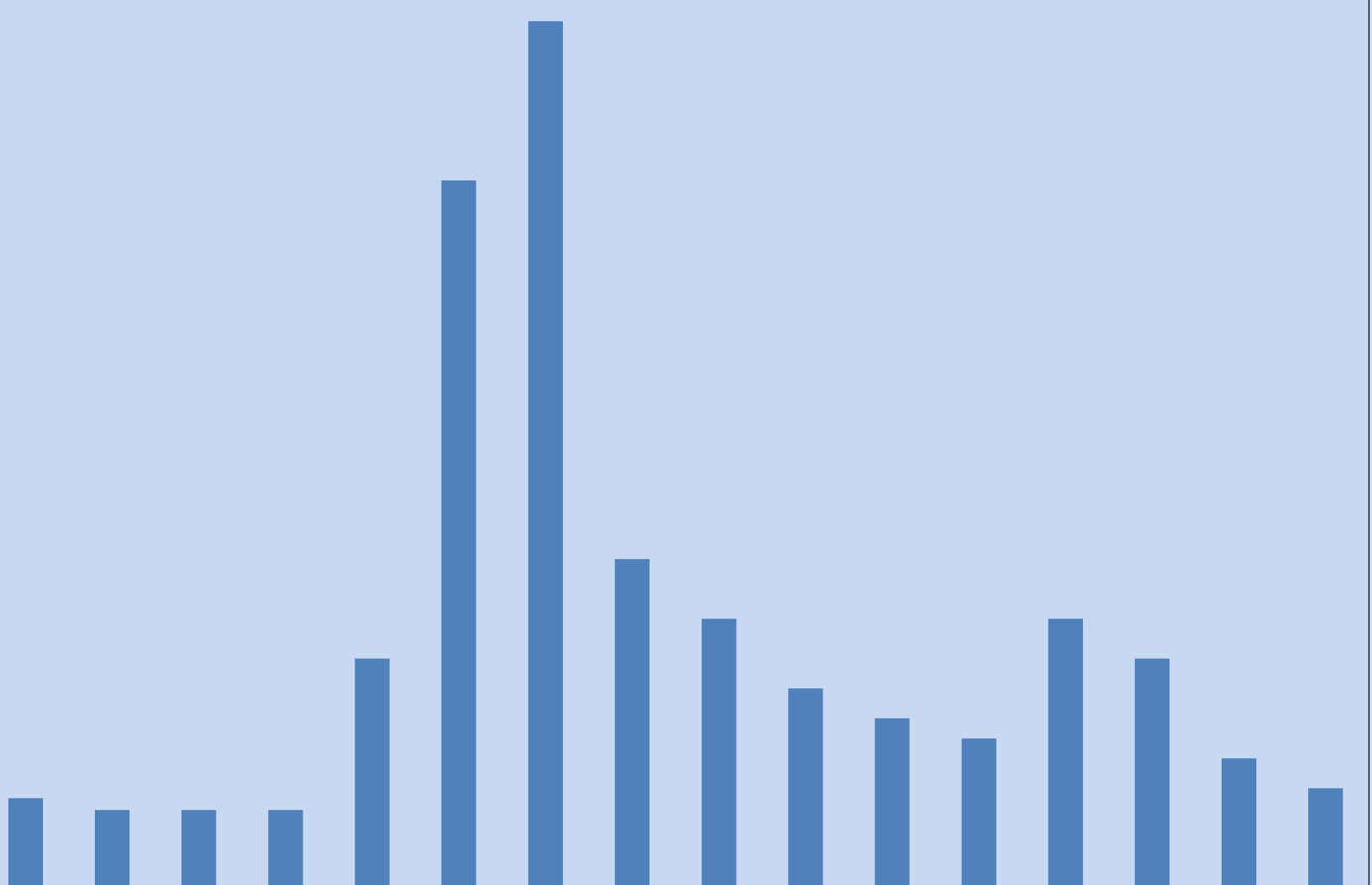


Deshka River Reservation: LAS13654

Discharge (cfs)

2500
2000
1500
1000
500
0

1-Jan	1-Feb	1-Mar	1-Apr	23-Apr	1-May	16-May	23-May	1-Jun	8-Jun	16-Jun	1-Jul	1-Aug	1-Oct	1-Nov	1-Dec
31-Jan	28-Feb	31-Mar	22-Apr	30-Apr	15-May	22-May	31-May	7-Jun	15-Jun	30-Jun	31-Jul	1-Sep	31-Oct	30-Nov	31-Dec

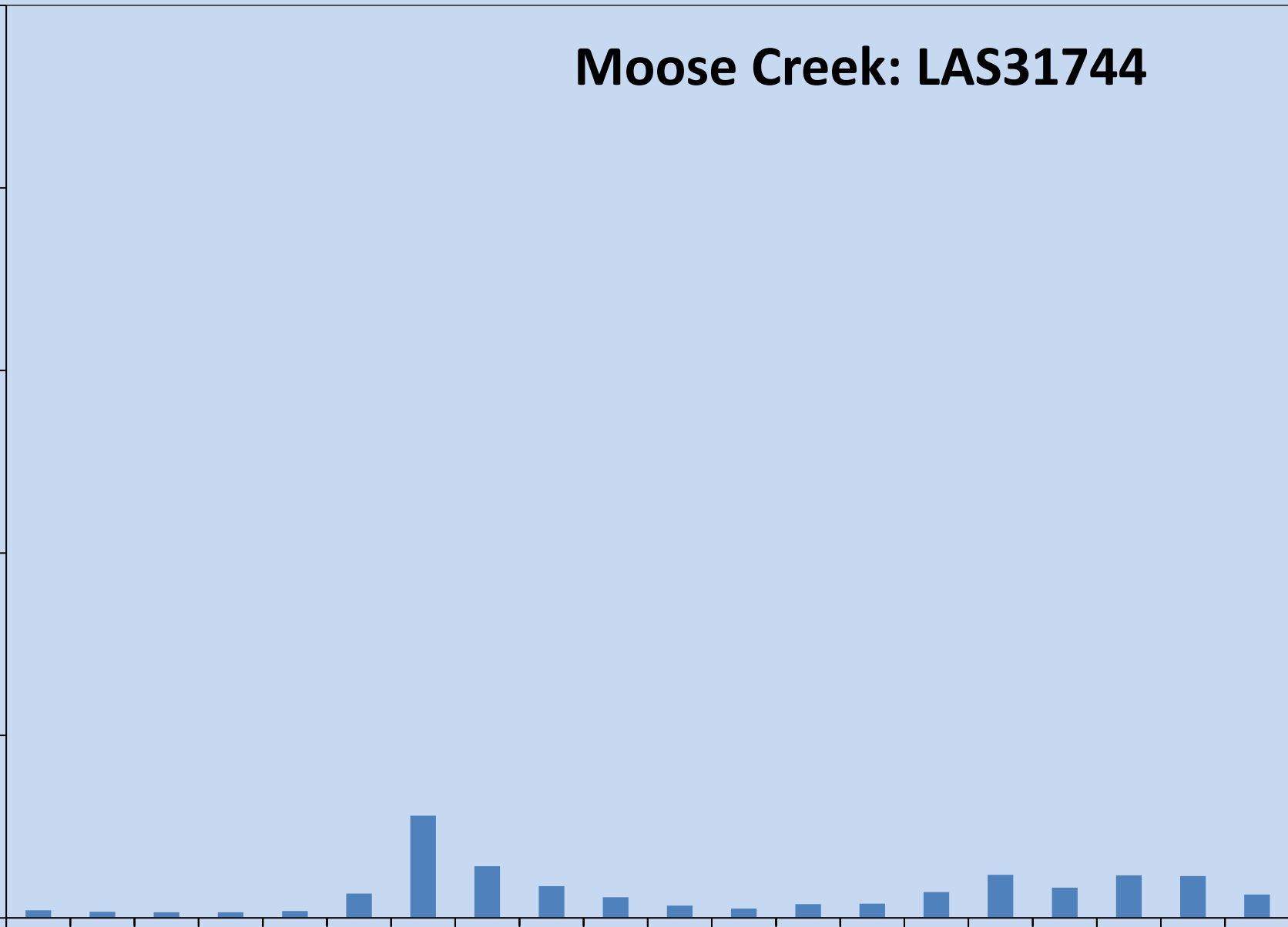


Moose Creek: LAS31744

Discharge (cfs)

2500
2000
1500
1000
500
0

01/01 02/01 03/01 04/01 04/16 04/24 05/01 05/16 05/24 06/01 06/16 07/01 07/16 08/01 08/08 08/16 09/01 10/01 10/16 10/24
01/31 02/28 03/31 04/15 04/23 04/30 05/15 05/23 05/31 06/15 06/30 07/15 07/30 08/07 08/15 08/31 09/30 10/15 10/23 10/31



Moose Creek: LAS31744

