

Elk Seasonal and Range Fidelity and Habitat Effectiveness



2013 Annual Report



Performance Standard #5

Seasonal and Range Fidelity



- “Fidelity to the seasonal ranges (yearlong, calving, and crucial winter) remains greater than 80% of current levels.”
- The seasonal crucial range fidelity will evaluate the collared elk use within the seasonal ranges (calving and crucial winter) during the crucial seasons.



Seasonal and Yearlong Ranges



- Seasonal ranges include: crucial winter, and parturition (calving).
- Based on previously defined ranges - WGFD.
- Yearlong (May 15 – May 14)
- Winter (December 1 – April 30)
- Parturition (May 15 – June 15)



Elk GPS Locations

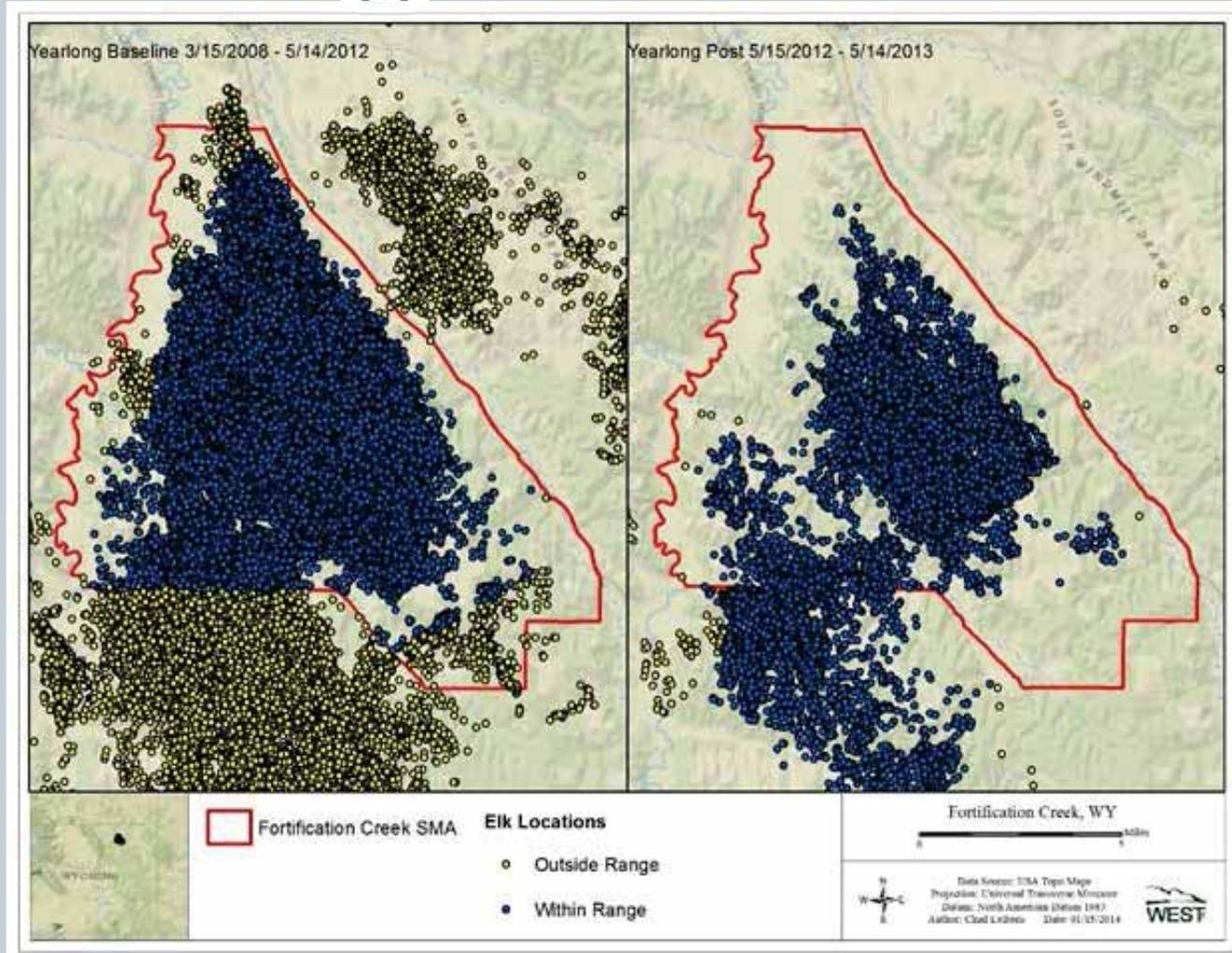


- **Baseline includes:**
 - 93 collared elk from 03/26/2008 to 5/14/2012
 - Location every 5 hours
- **2013 Annual Report**
 - 33 collared elk from 5/15/2012 to 6/15/2013
 - Location every 5 hours
- **Determined the proportion of elk locations that occur in the pre-defined seasonal ranges.**
- **2014 analyses forthcoming although, no additional development has occurred since 2013 analyses**



Yearlong (May 15 to May 14)

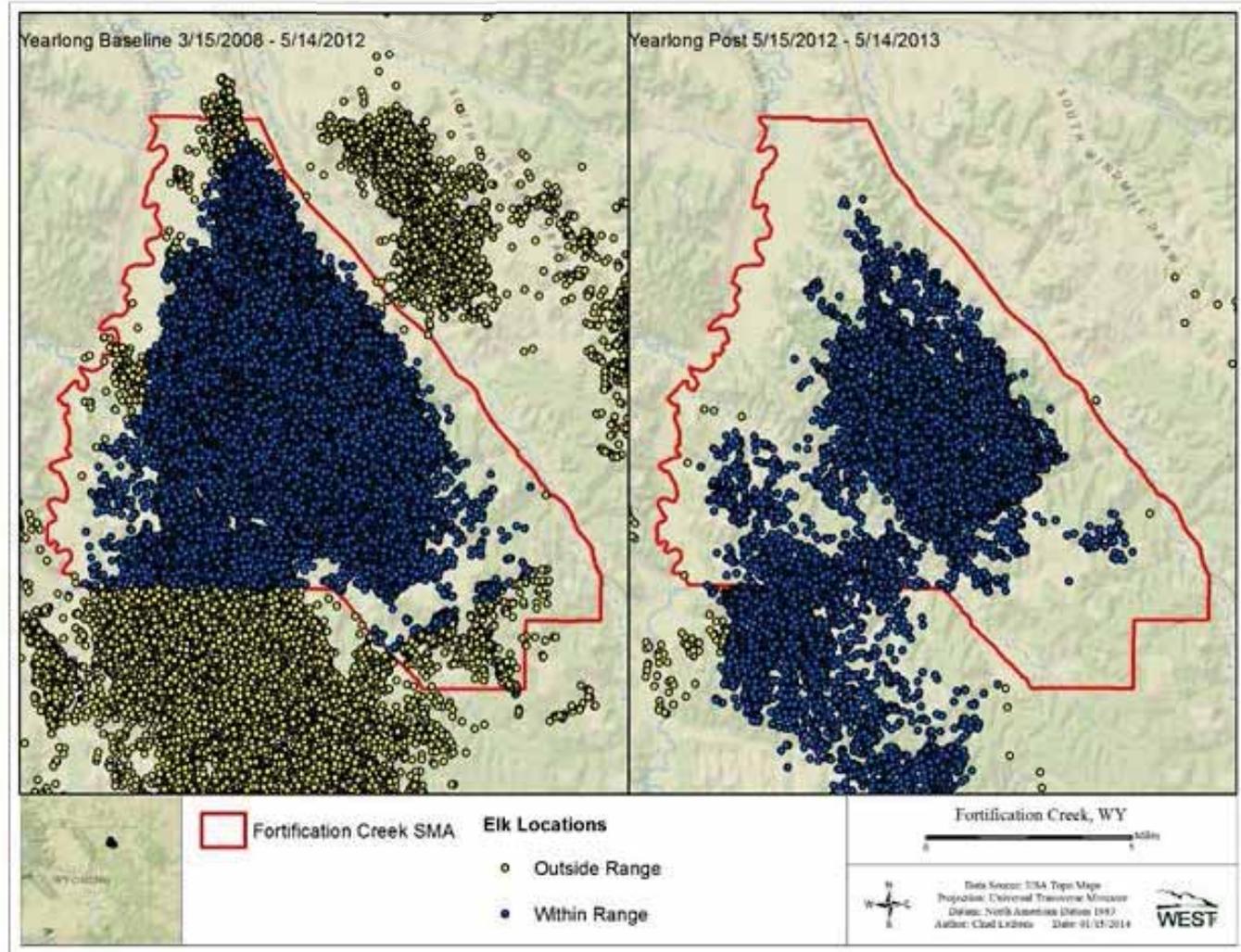
~ 71% of the elk locations are within the pre-defined yearlong range
~57% is 80% of baseline
Or
~78% of the elk location in the herd unit occurred within the yearlong range
~62% is 80% of baseline



Yearlong (May 15, 2012 to May 14, 2013)

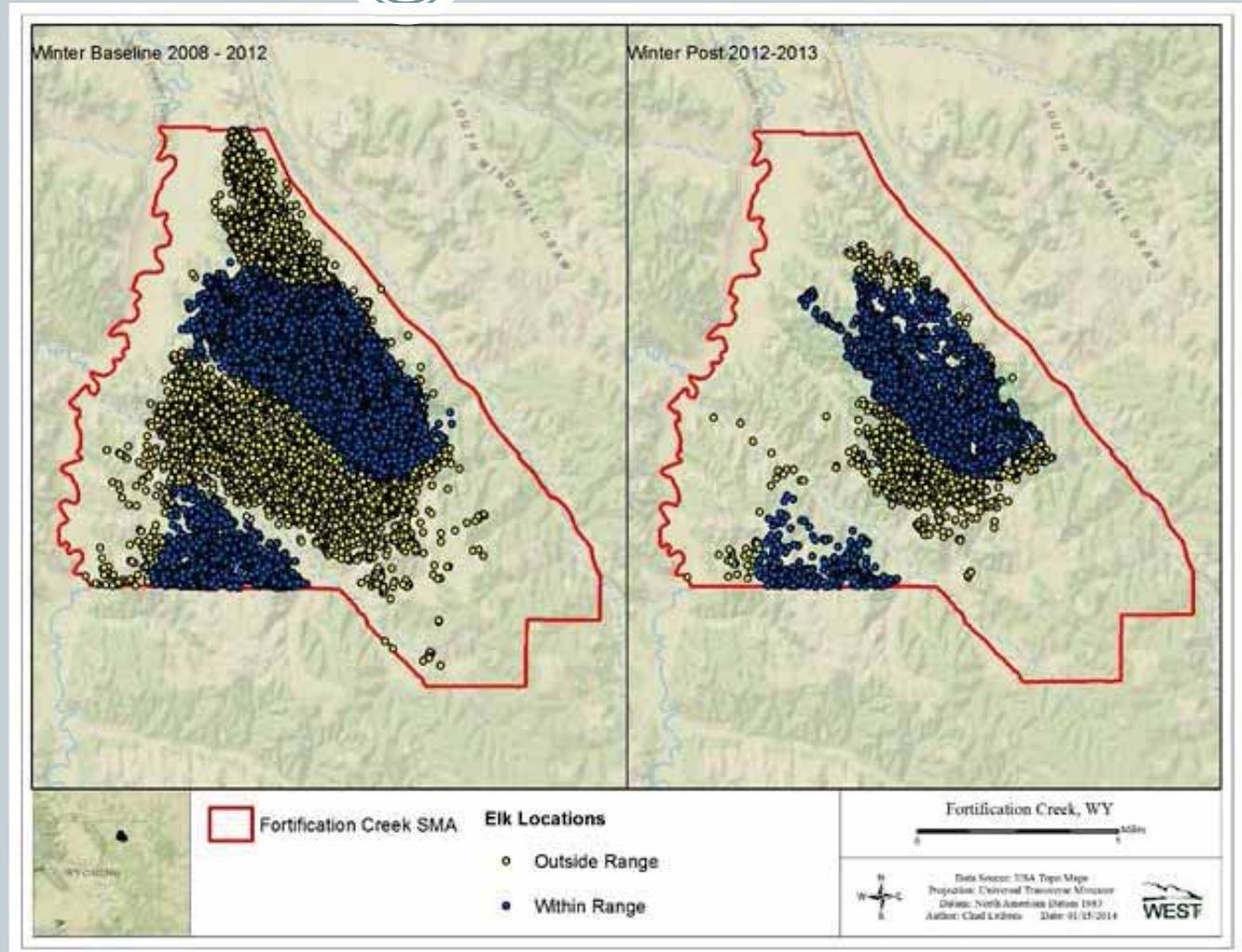
~94% of elk locations are within the pre-defined yearlong range

~95% of the elk locations in the herd unit occurred in the yearlong range



Winter (December 1 to April 30)

~52% of elk locations within the FCPA are within the winter range
~42% is 80% of baseline
Or
~40% of the elk locations in the herd unit occurred in the winter range within the FCPA
~32% is 80% of baseline



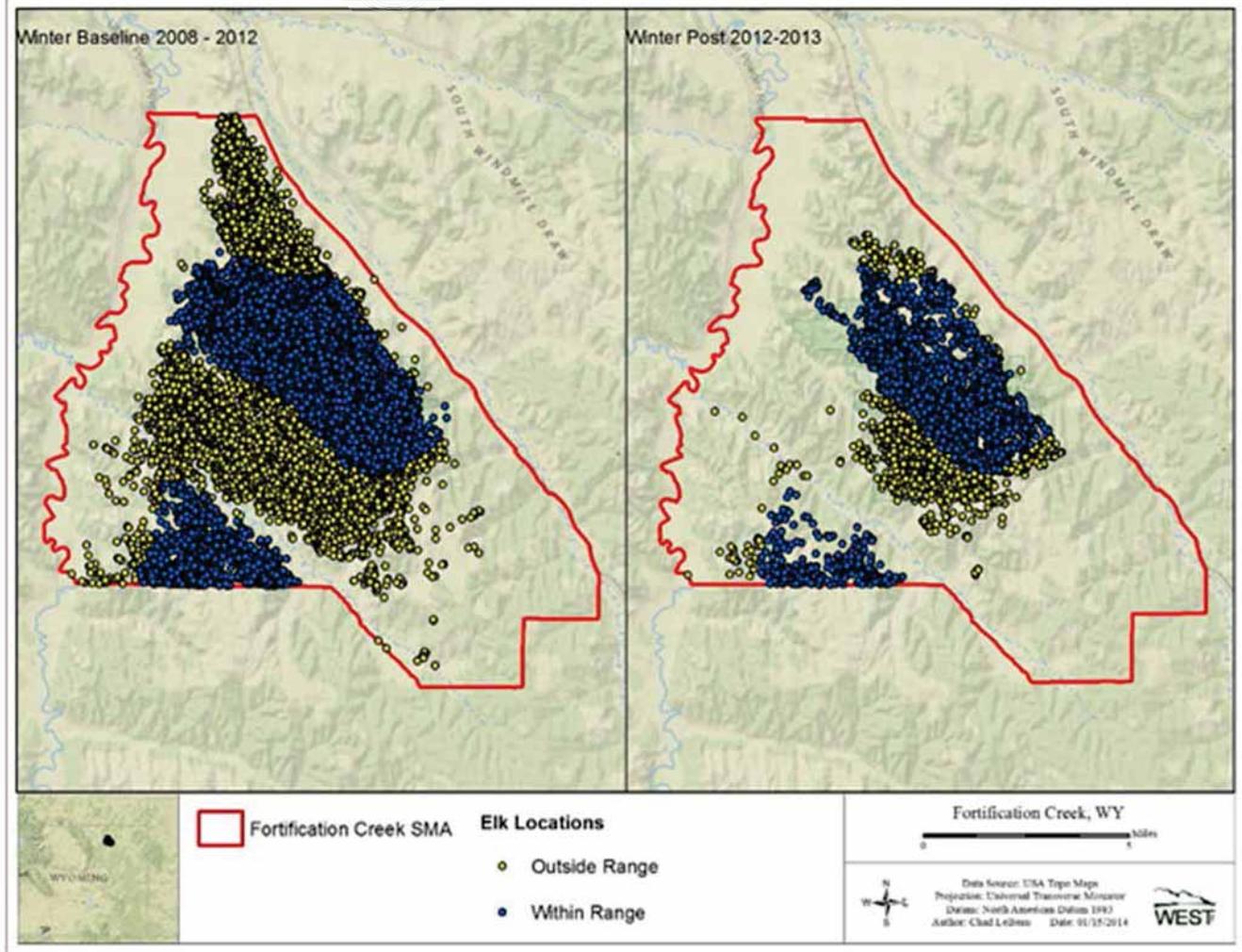
Winter (December 1, 2012 to April 30, 2013)



~65% of elk locations within the FCPA are within the winter range

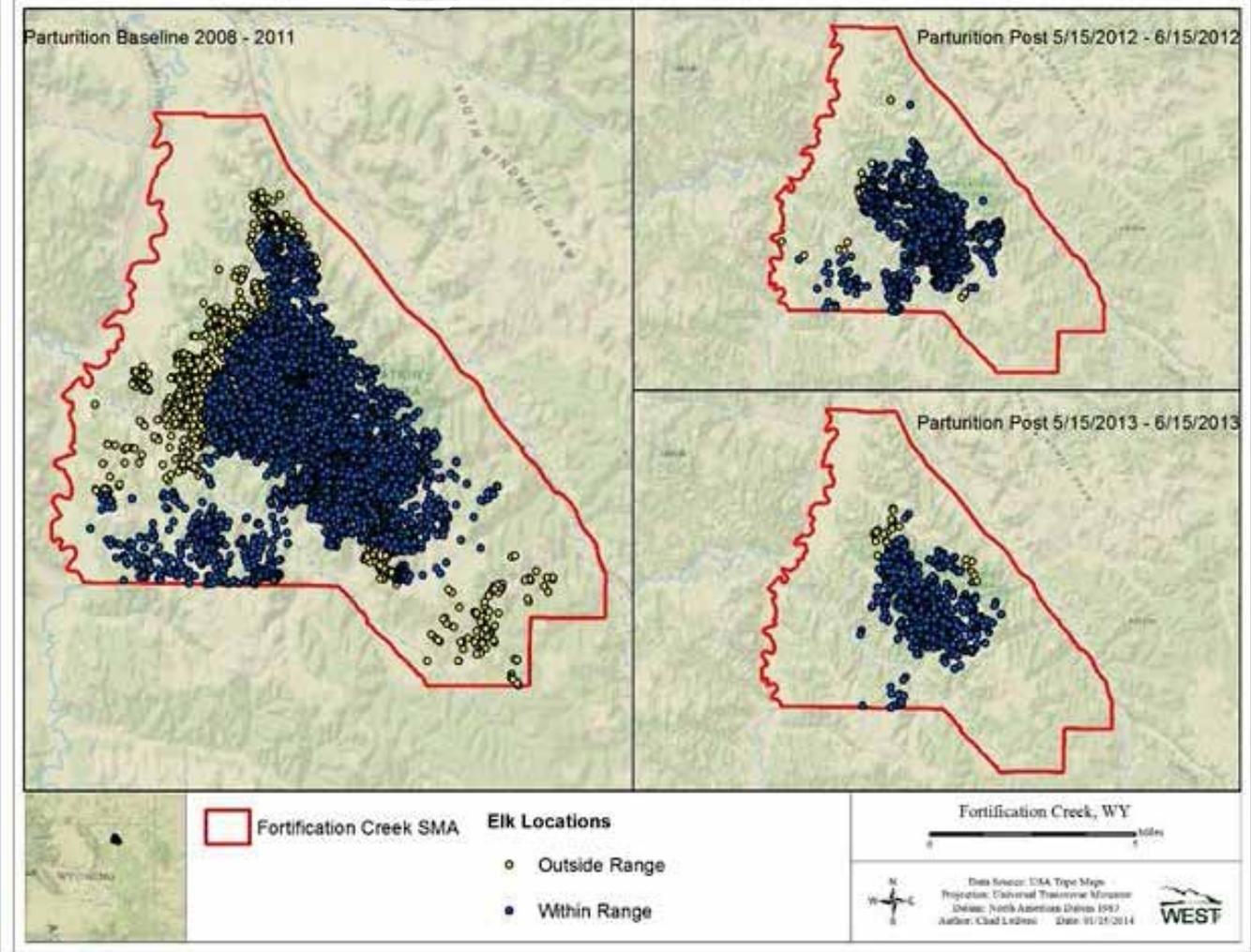
Or

~46% of elk locations within the herd unit occurred within the winter range within the FCPA



Parturition (May 15 to June 15)

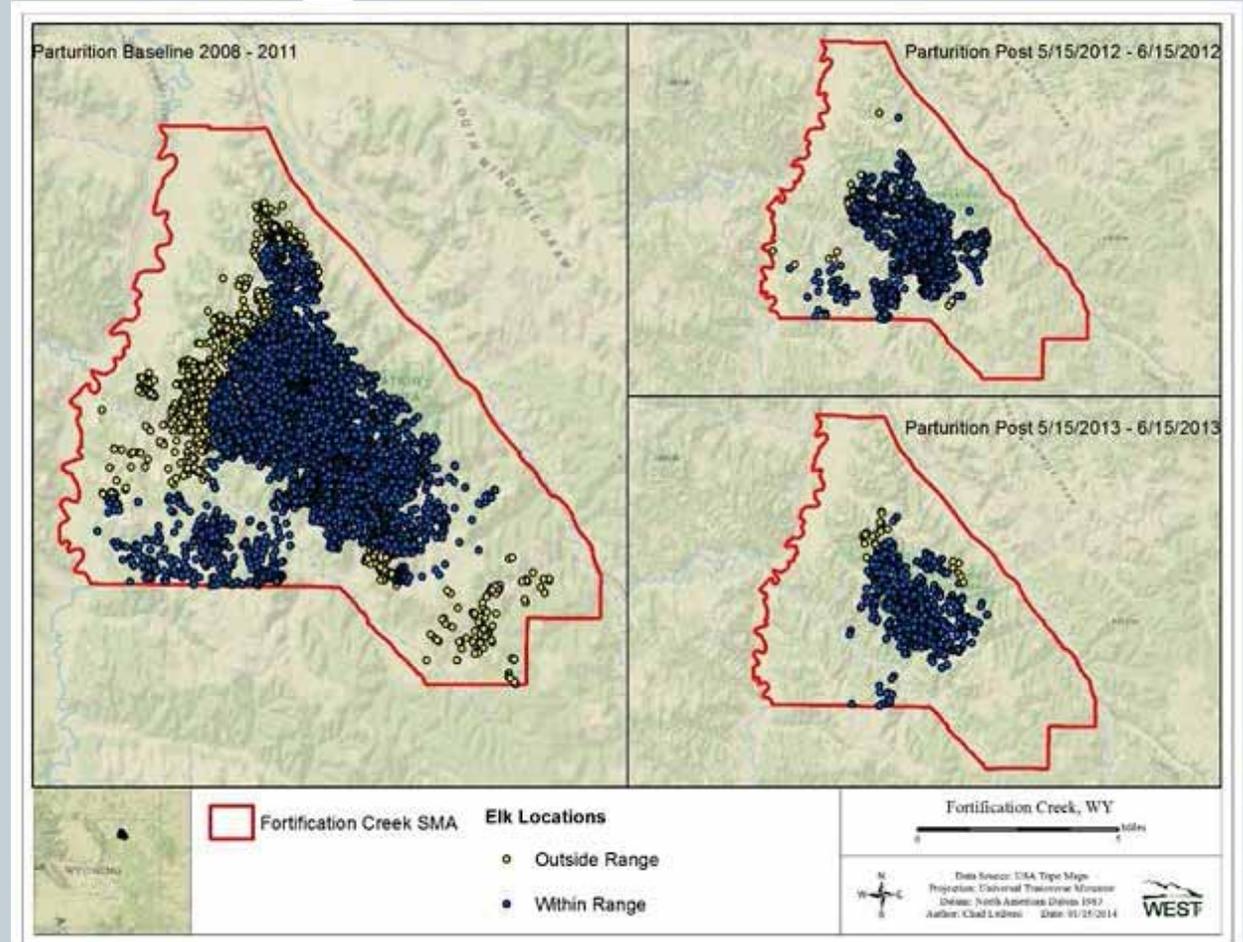
~88% of elk locations within the FCPA are within the parturition range
~70% is 80% of baseline
Or
~69% of the elk locations in the herd unit occurred in the parturition range within the FCPA
~55% is 80% of baseline



Parturition (May 15 to June 15, 2012)

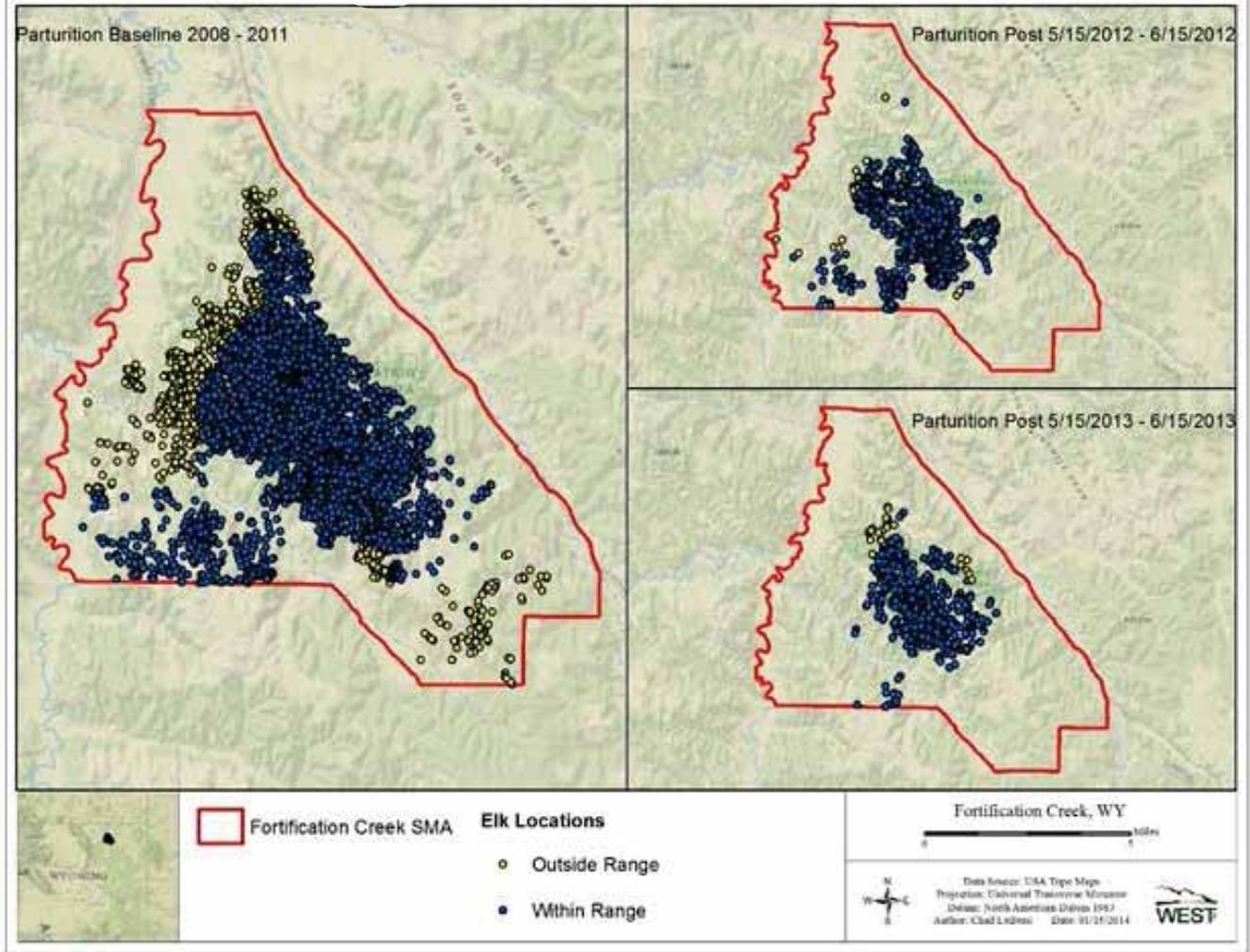
~93% of elk locations within the FCPA were within the parturition range

Or
~83% of elk locations within the herd unit were within the parturition range in the FCPA

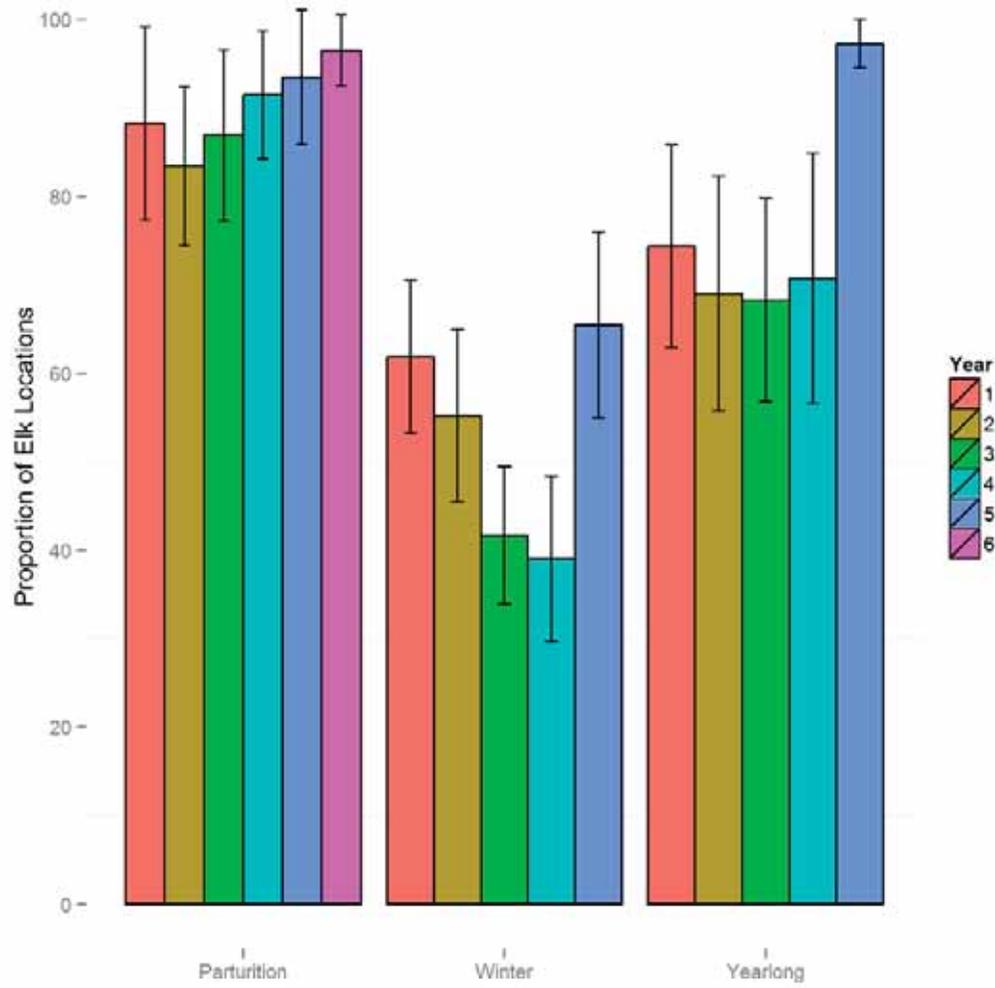


Parturition (May 15 to June 15, 2013)

~96% of elk locations within the FCPA were within the parturition range
Or
~61% of elk locations within the herd unit were within the parturition range in the FCPA



Annual Variation



70%

42%

57%



Habitat Effectiveness



- Elk GPS locations used to estimate a resource selection function (RSF) for each seasonal range (winter, parturition, and yearlong)
- Restricted the locations to the FCPA.
- Estimates elk use as a function of several key habitat variables (e.g. slope, elevation, distance to cover, etc.)
- Developed baseline predictive maps that can be used to compare with subsequent years.



Model Selection



- Developed eight a priori models
- Each of the competing models were fit to the data
- Used AIC to determine the best model for each season.
- The same model was selected for all three seasons
- Model includes the following variables: elevation, slope, ruggedness, distance to road, and distance to cover.



Variables



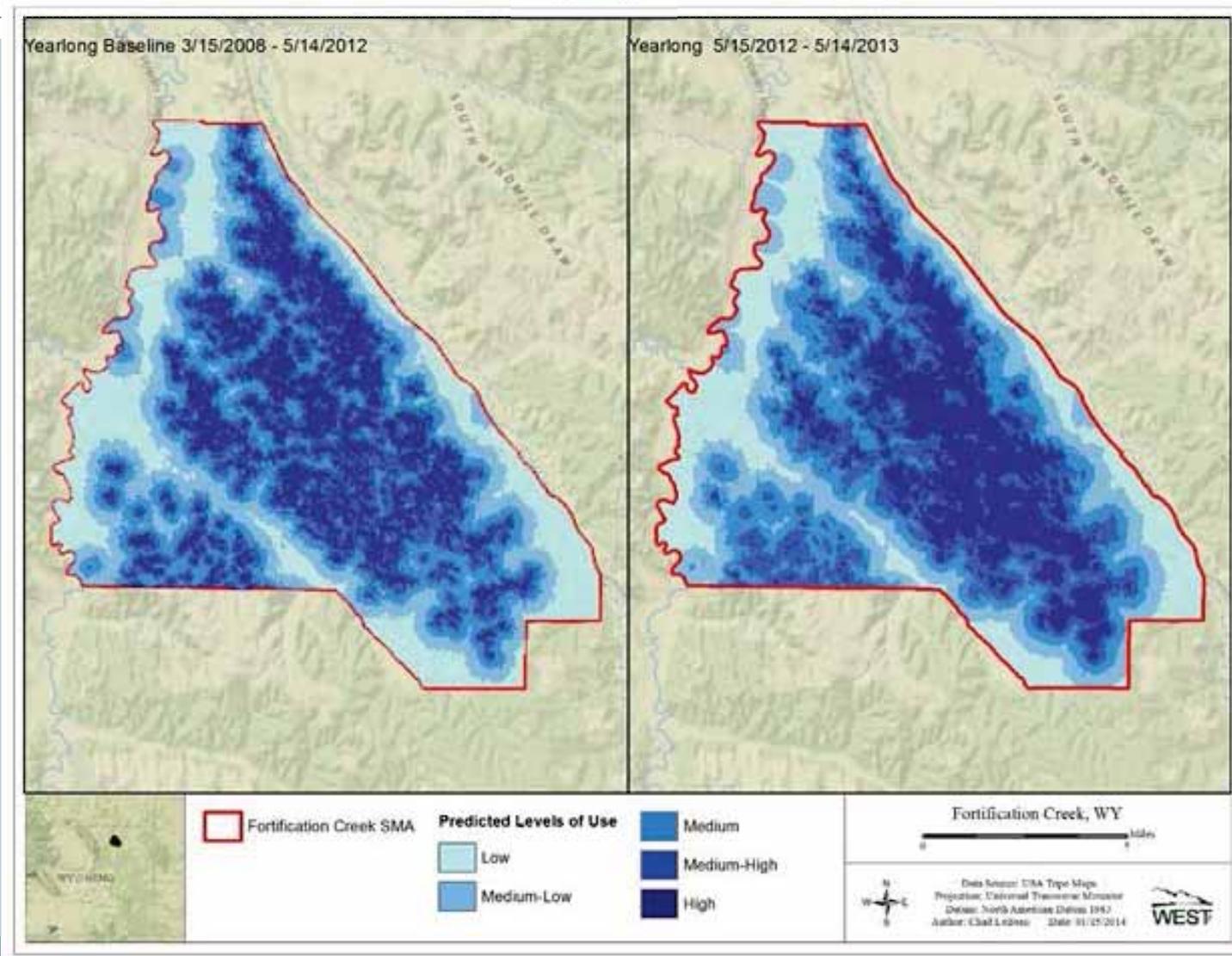
- In general, elevation, ruggedness, slope, and distance to road all have a positive relationship with relative probability of elk use.
- Distance to cover has a negative relationship with relative probability of elk use.

Comparisons to Baseline

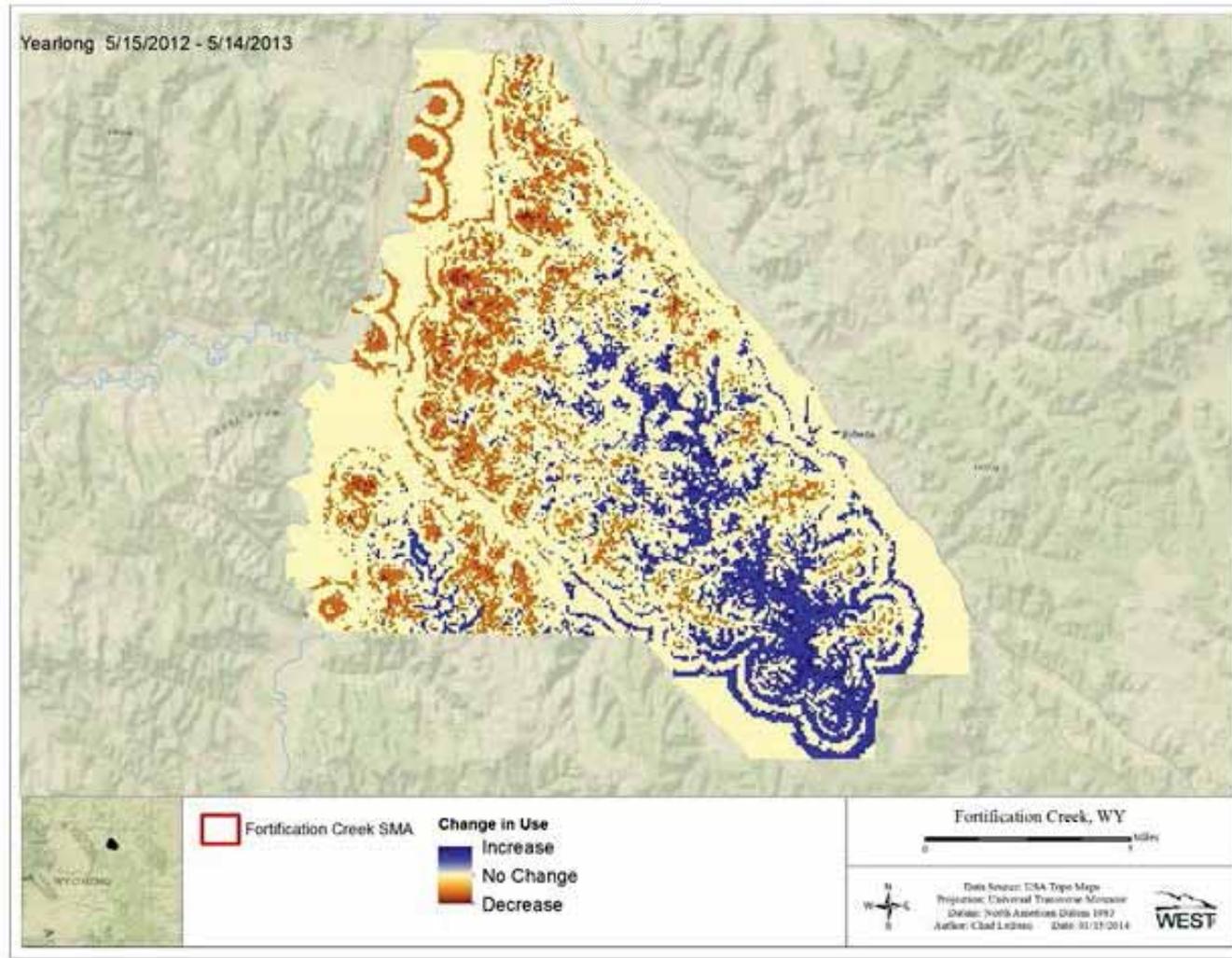


- Yearlong – influence of elevation and distance to road on relative probability of use appears to be greater in the post-baseline period than during baseline.
- Parturition – 2012 saw a reduction in the influence of elevation and distance to road on relative probability of use although 2013 saw an increase in the influence of elevation and distance to road
 - Variability in influence of ruggedness among baseline, 2012, and 2013
 - Percent slope and ruggedness not significant in 2013
- Winter – Influence of elevation and distance to road on relative probability of use increased post-baseline
- Overall – selection of areas further from roads and higher in elevation during post baseline period compared to baseline.

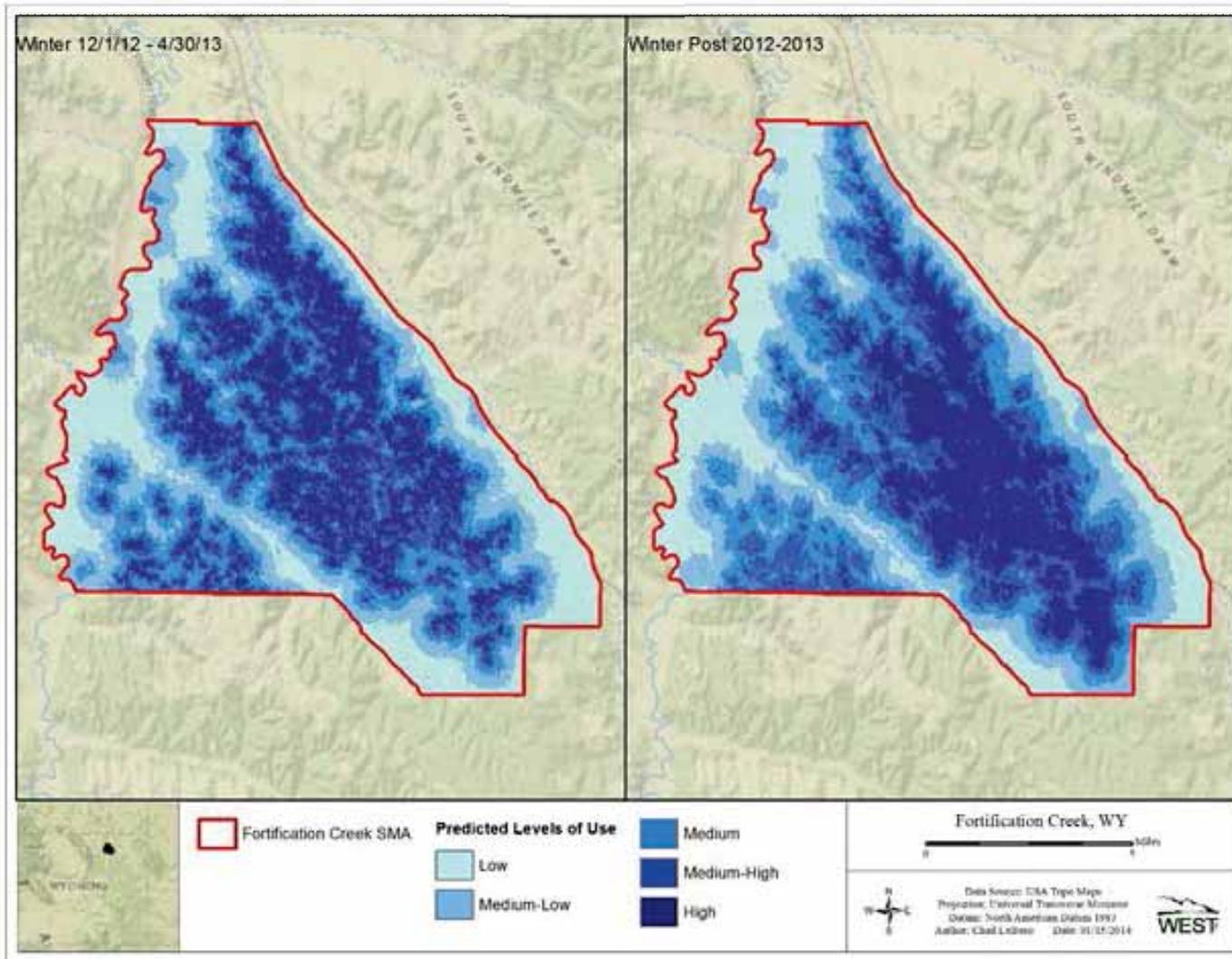
Predictive Map - Yearlong



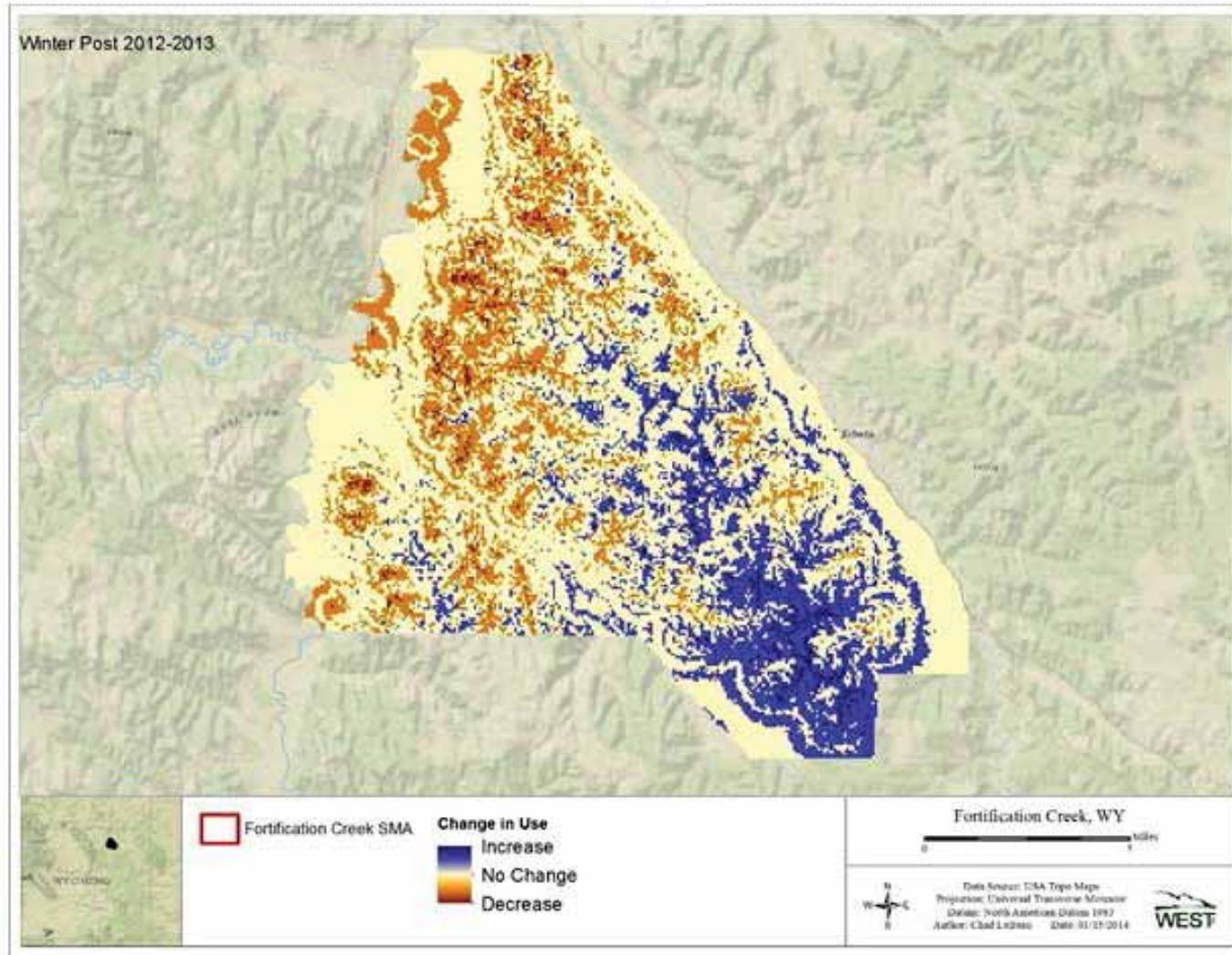
Yearlong Change in Predicted Levels of Use



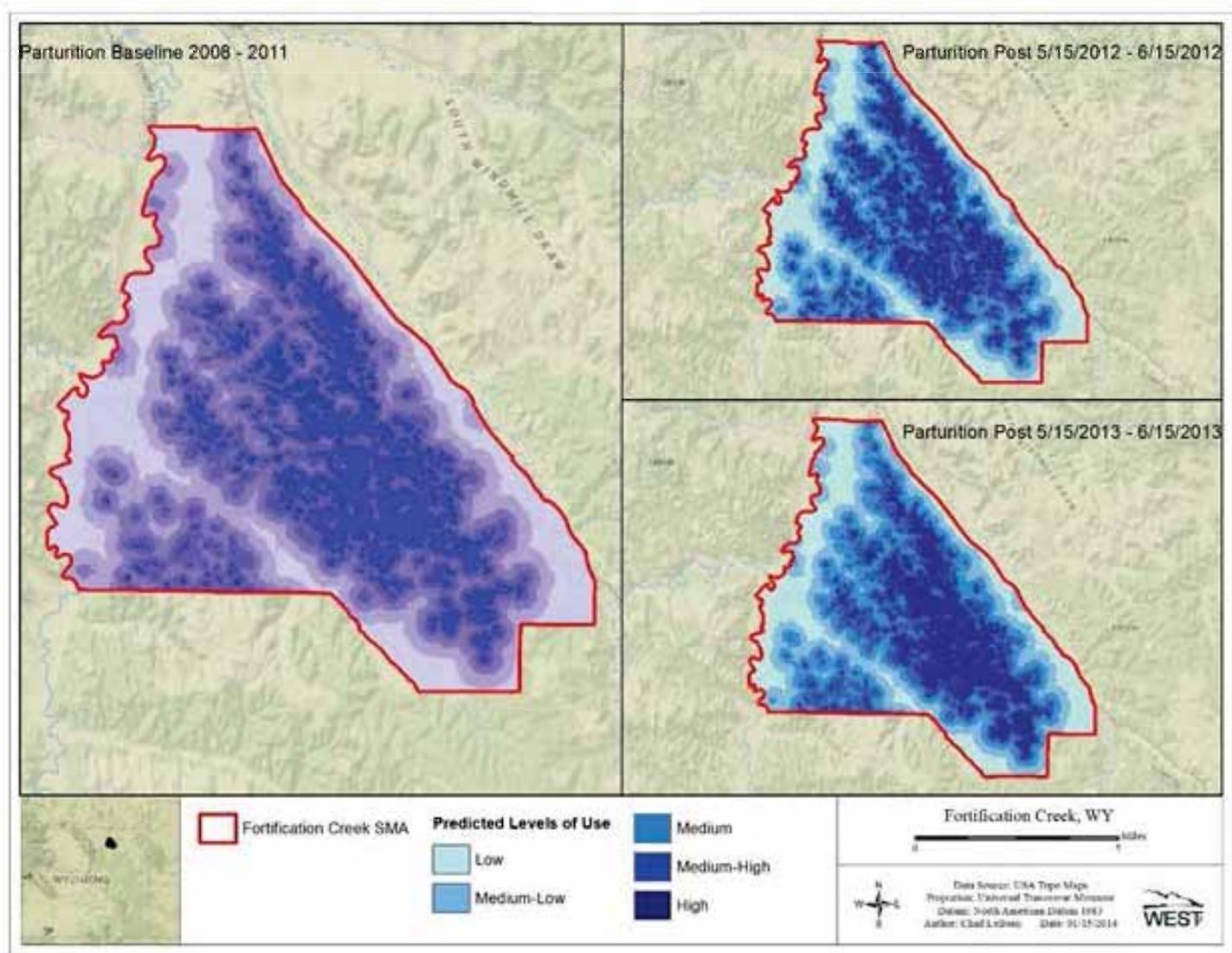
Predictive Map - Winter



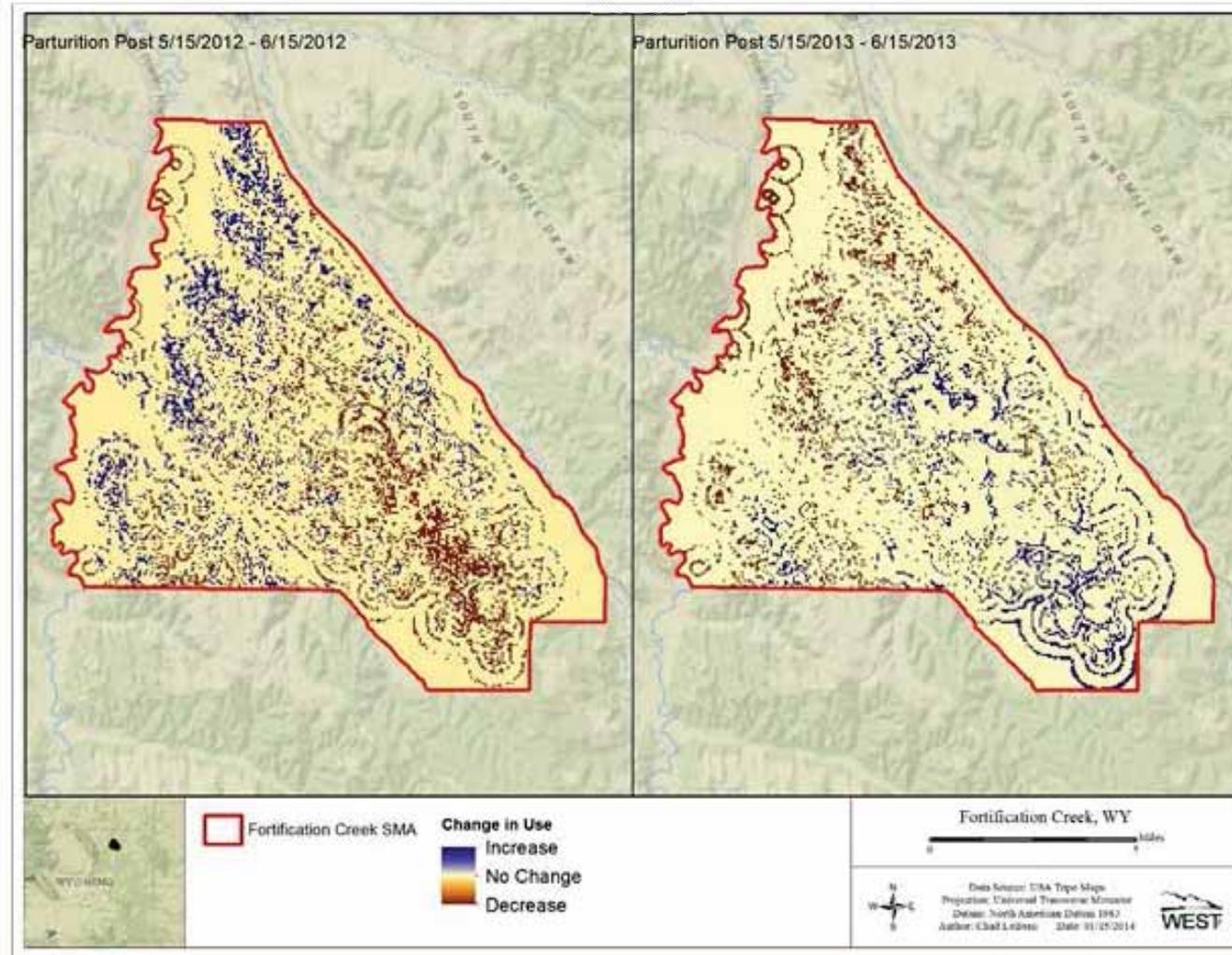
Winter Change in Predicted Levels of Use



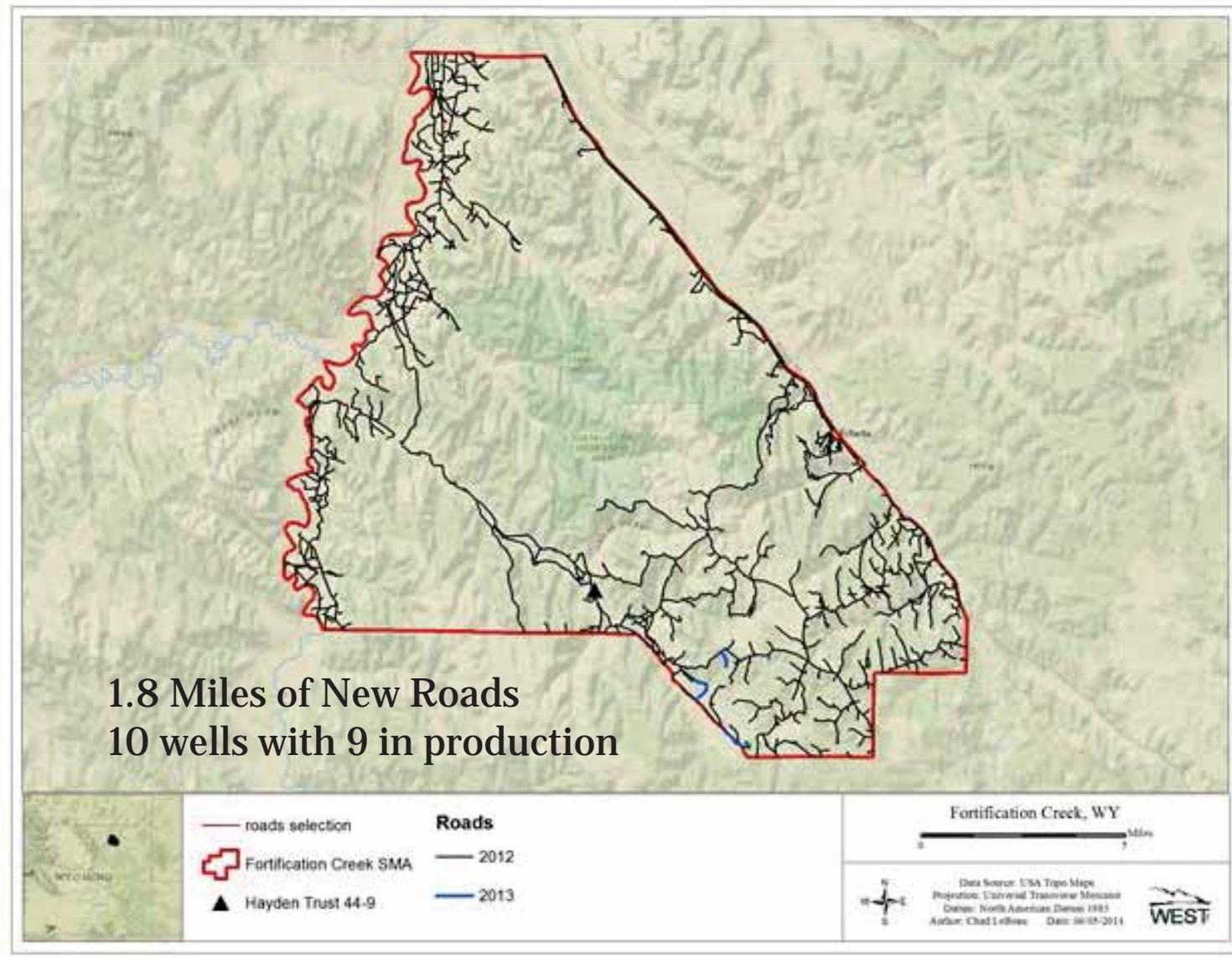
Predictive Map - Parturition



Parturition Change in Predicted Level of Use



Development in 2013



Non-federal oil well early 2013



- Well not within the FCPA but, included at the request of the BLM
- Evaluated the average distance of elk locations within varying distance bands (e.g. 300 m, 500 m, 700 m, 1,000 m, 1,500 m, and 3,000 m) from well location prior to development and post development
- Yearlong
 - Average distance of elk locations observed within 300 m of the well prior to development was 194 m.
 - Elk use did not occur within 1,000 m of the well during the post-baseline yearlong period. Average distance within 1,500 m band was 1,424 m after development compared to 1,051 m prior to development
- Parturition
 - Prior to development closest distance band 1,000 m however, no locations in this distance band post-development
 - Average distance within 1,500 m was 1.319 m prior to development compared to 1,405 m after development



Non-federal oil well early 2013 continued



- **Winter**
 - Prior to development, closest distance band was 700 m and after development, closest distance band was 1,500 m
 - Average distance of locations to the well within the 1,500 m band was 1,451 m after development compared to 1,269 m prior to development.
- **Increase in distance bands and average distances of elk locations from non-federal oil well following development**
- **Important to note that causation is unknown**
 - Could be result of a number of factors (e.g. specific elk that were marked during different time periods, weather conditions, etc.)

Summary



- Proportions of Elk locations above minimum Performance Standards
- RSF indicates elk selected habitat further from roads and higher in elevation during the post-baseline period compared to baseline
- Continued monitoring of collared elk over time should help to better understand potential influence of development on elk use and habitat selection in the area.



Questions?

