INTERPRETING AND SYNTHESIZING OUTPUTS

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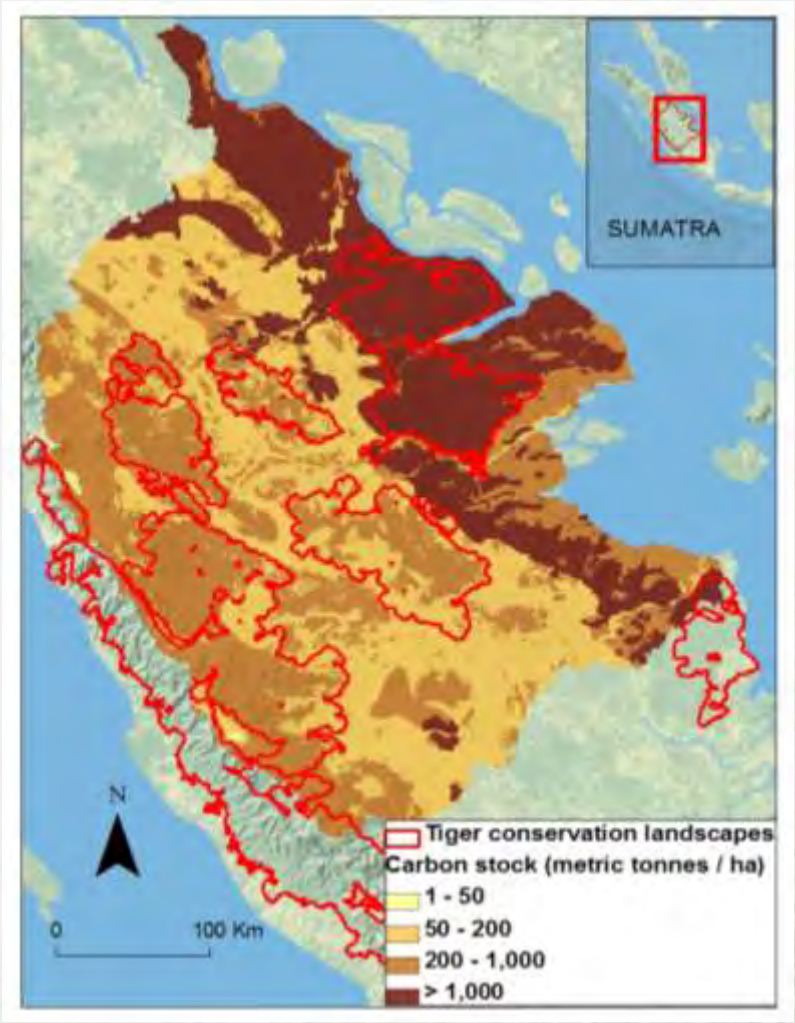
INTERPRETING OUTPUTS

SCRUTINIZING RESULTS

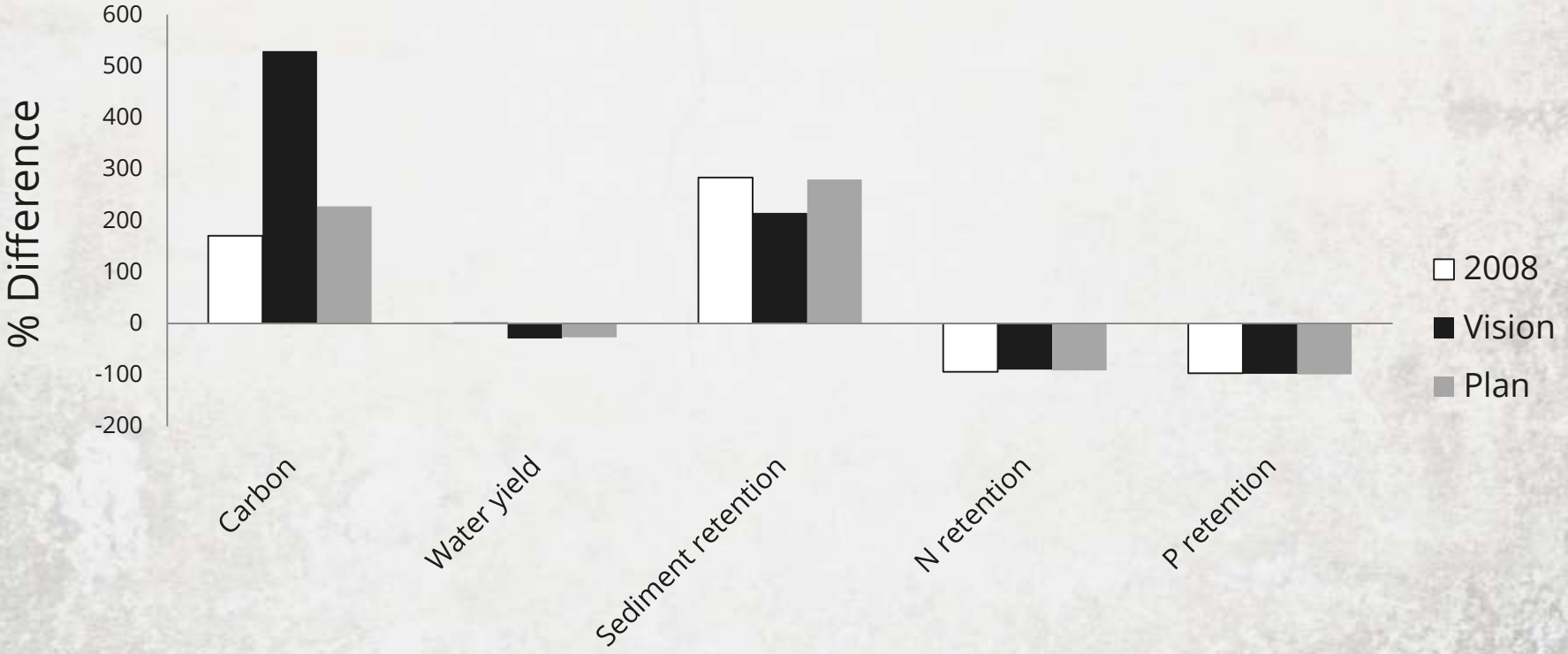
- No areas of missing data
- Spatial pattern makes sense
- Model limitations – how do they affect your interpretation?
- Uncertainty in inputs
- Output values look like they're in the right ballpark…

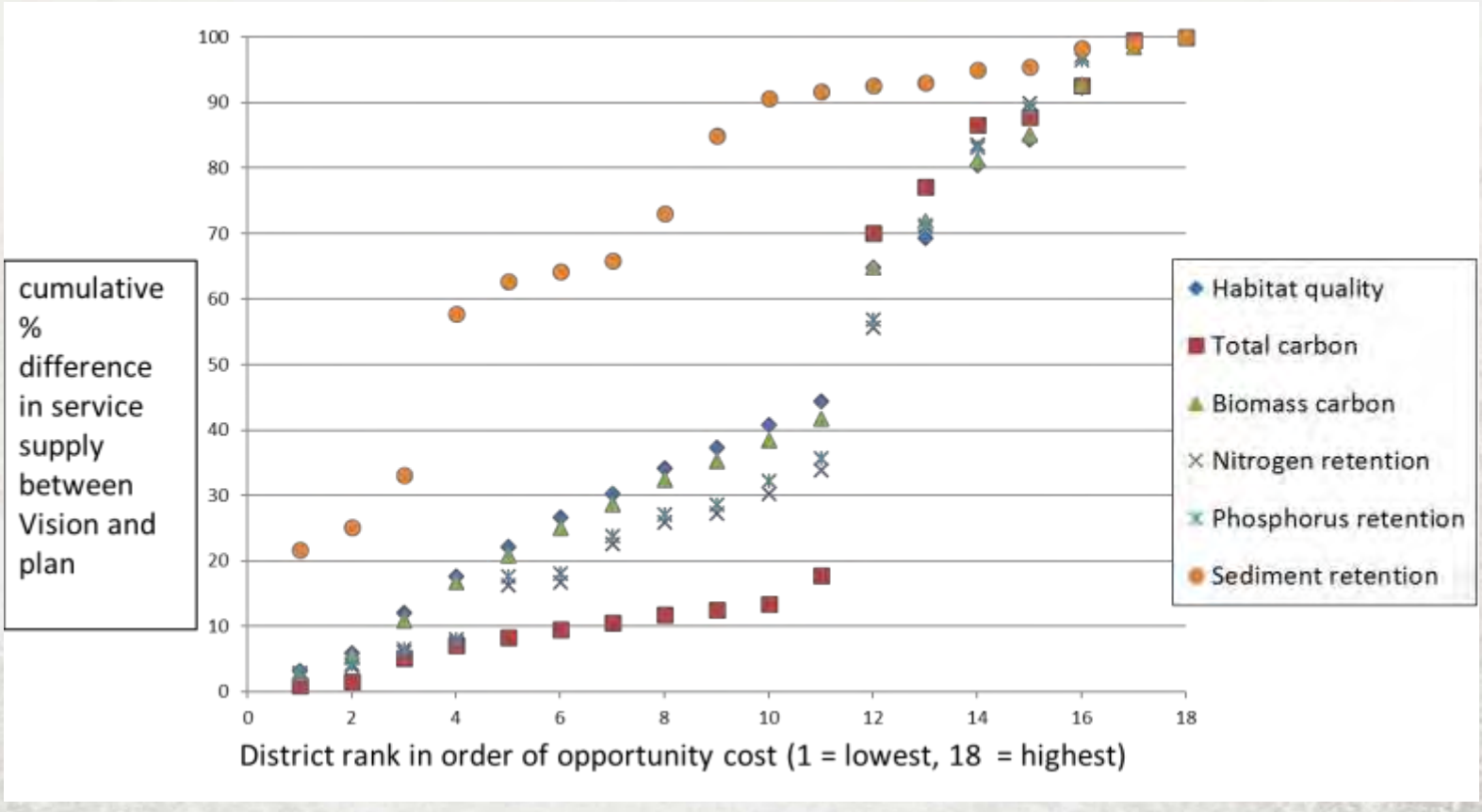
OVERLAY WITH OTHER DATA

Carbon stock
+ tiger habitat



Services provided within tiger habitat versus outside

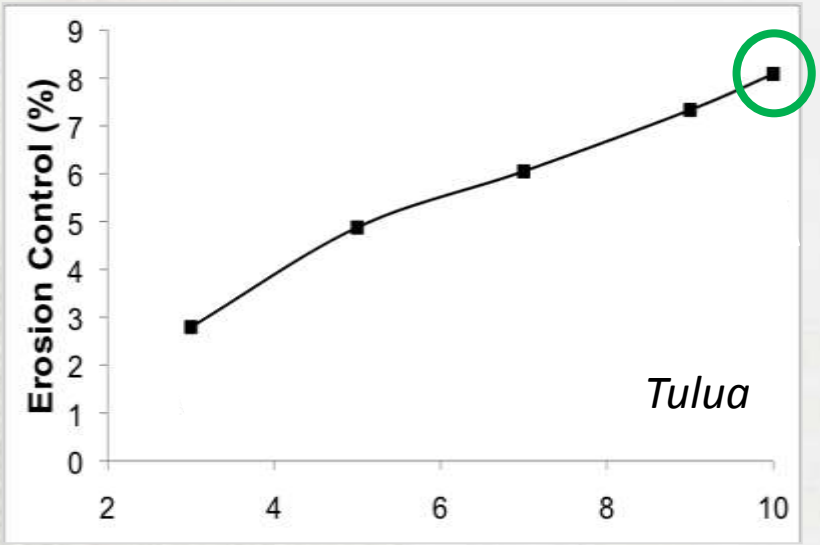


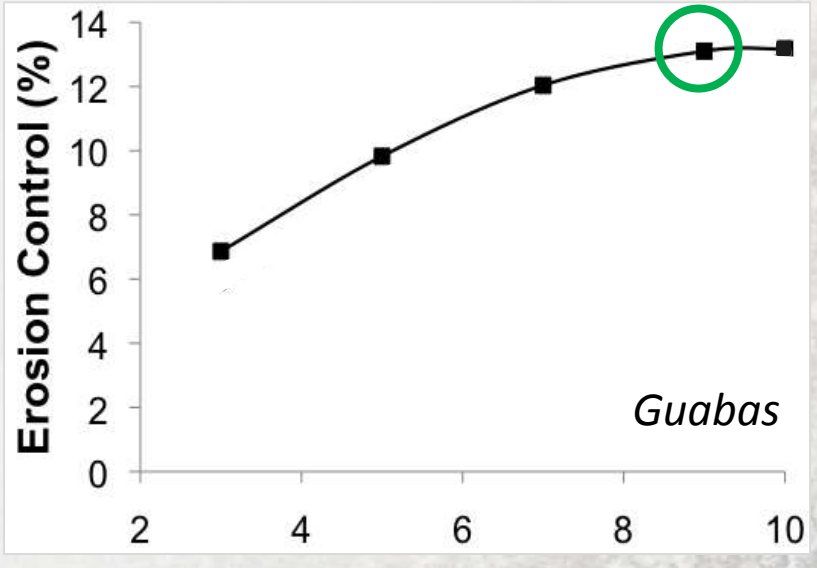

cumulative % difference in service supply between Vision and plan
100
90
80
70
60
50
40
30
20
10
0
0
2
4
6
8
10
12
14
16
18
District rank in order of opportunity cost (1 = lowest, 18 = highest)
Habitat quality
Total carbon
Biomass carbon
Nitrogen retention
Phosphorus retention
Sediment retention

COMPARE CHANGE

Percent change can be very useful…

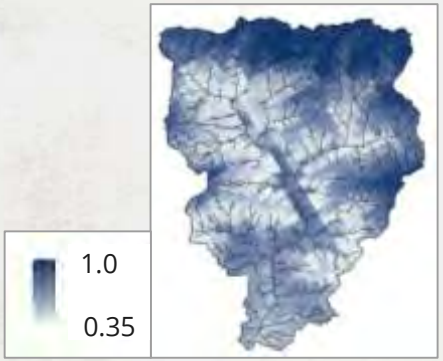
Return on Investment





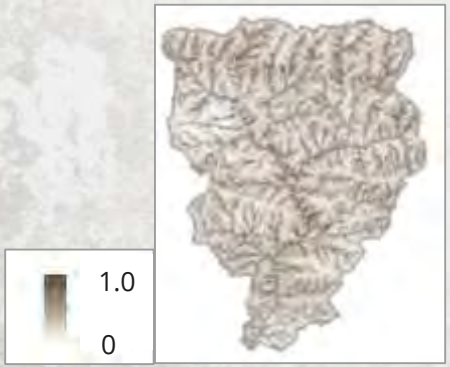
RANK ACROSS MULTIPLE SERVICES

Biodiversity



x 1

Carbon

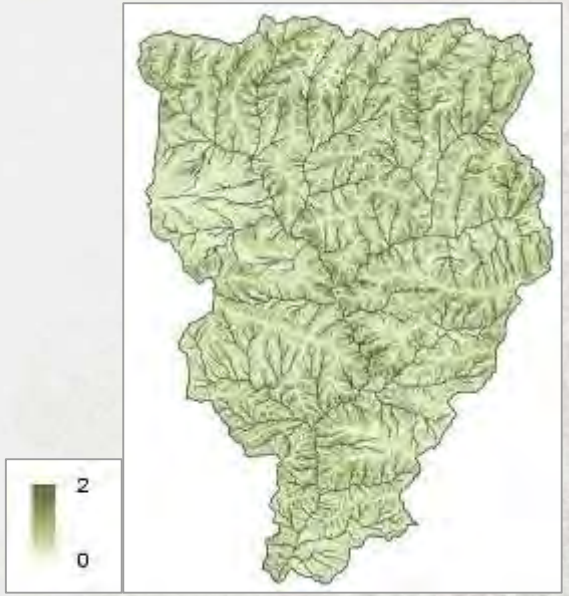


x 2

\+

=

Total Relative ES provision



AGGREGATING RESULTS

- Can aggregate within countries, administrative zones, land cover classes…
- Do the results cover the whole area of interest?

Serviceshed: *A specific area that provides a service to a group of people*

- Hydrology: watershed
- Pollination: foraging range
- Recreation: travel distance

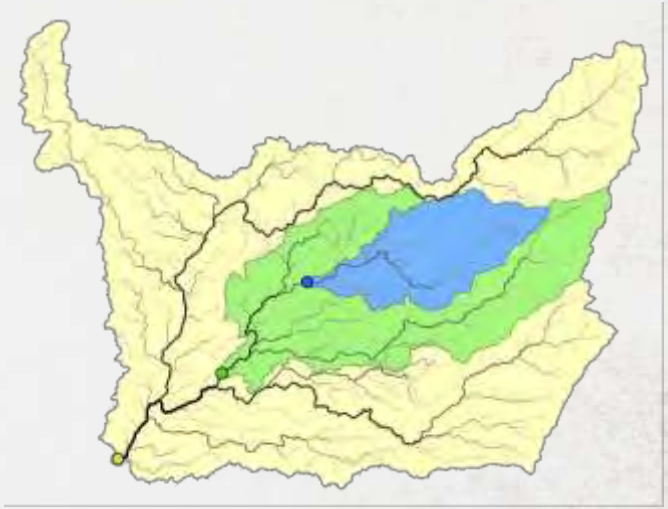
If servicesheds overlap, total service > supply

TERRESTRIAL HELPER TOOLS

- Calculate change between scenarios
- Prepare the DEM
- Create servicesheds
- Multi-service landscape ranking

CREATE SERVICESHEDS

Uses Arc Hydro to create watersheds/servicesheds



Inputs:

- DEM
- Outlets
- Stream threshold

Outputs:

- Stream raster/shapefile
- Servicesheds shapefile

CALCULATE CHANGE

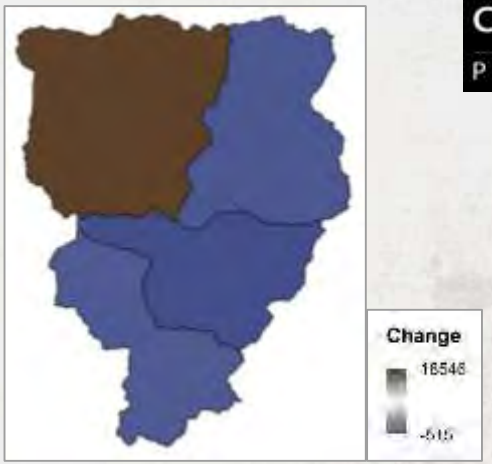
- Absolute and percent change
- For pixel, subwatershed and watershed data
- Aggregate by area of interest
- Split raster results into < 0 and >= 0

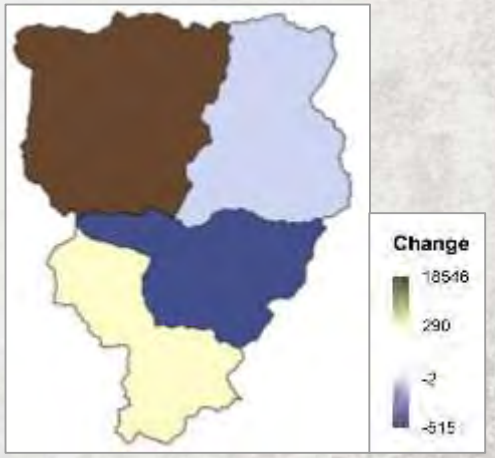
Inputs:

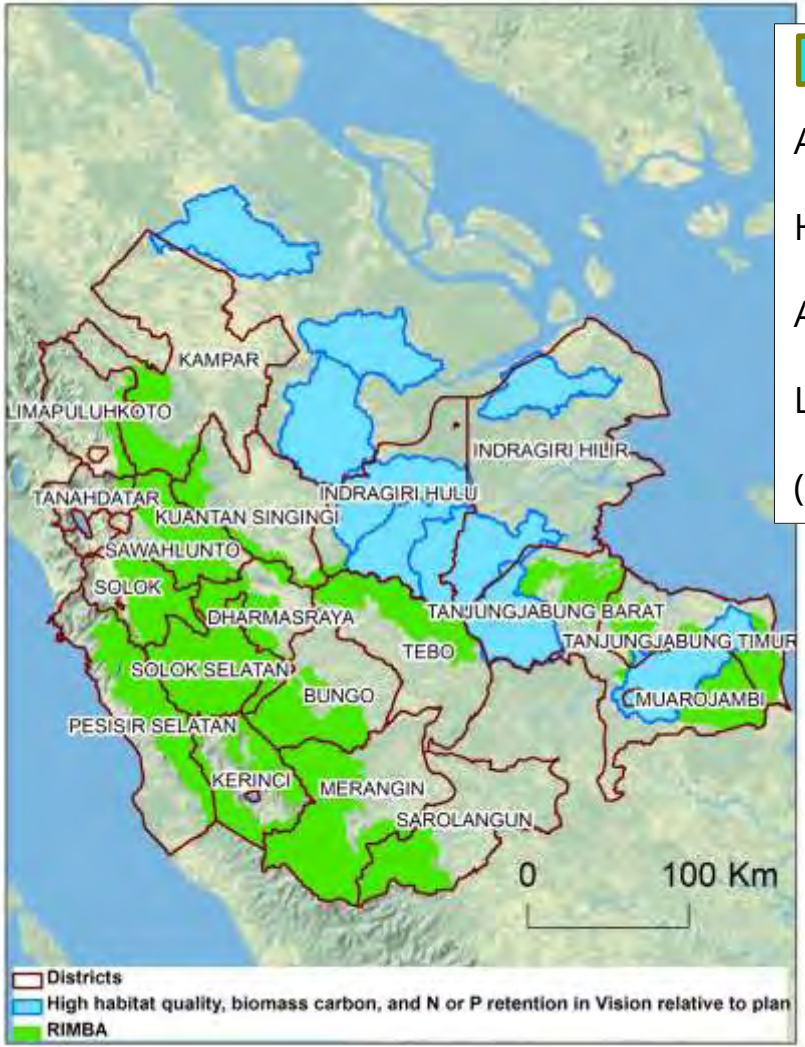
- 2 scenarios
- Subwatersheds
- Area of interest

Outputs:

- Change rasters (pixel/subwatersheds)
- Change tables (watersheds/subwatersheds/AOI)
- Split rasters







High habitat quality increase

AND

High *biomass* carbon stock increase

AND

Large reduction in nutrient export (N or P)

(Green Vision – Govt plan)

Implementing the Vision here would enhance wildlife habitat and sequester carbon…

And benefit downstream communities through improved water quality.

MULTI-SERVICE RANK

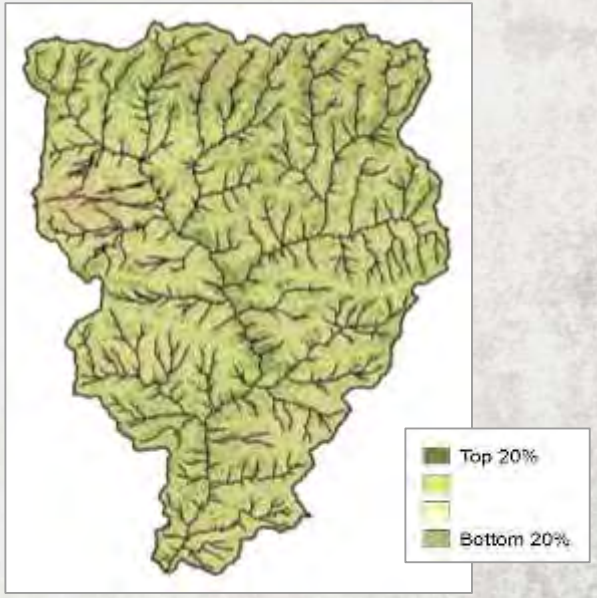
- Ranks landscape across multiple services
- Groups results by a given percent
  - By distribution and/or area

Inputs:

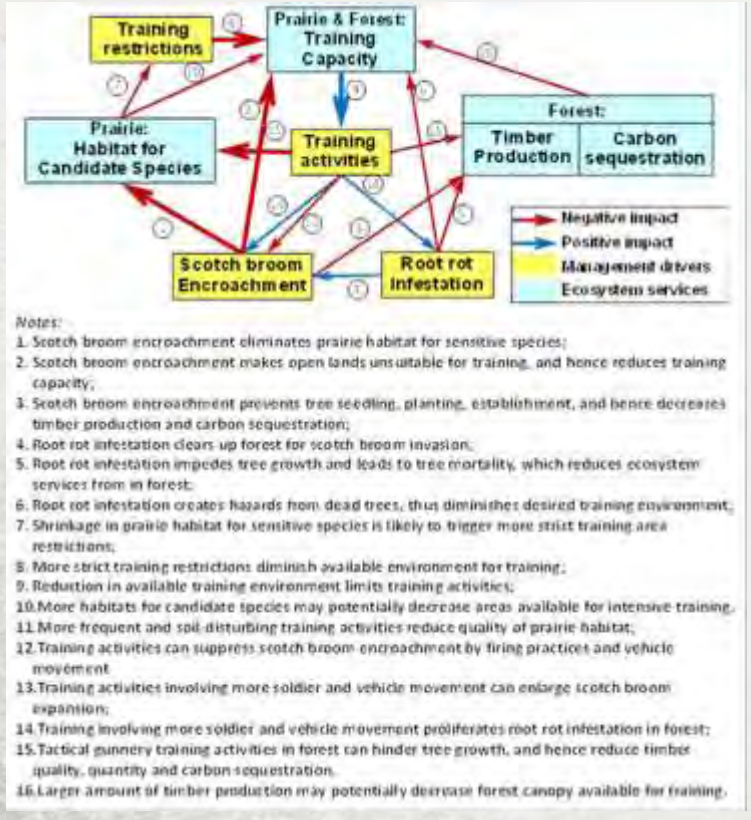
- Service output maps
- Weight per service
- Grouping percent

Outputs:

- Ranked landscape raster
- Grouped ranking shapefile(s)

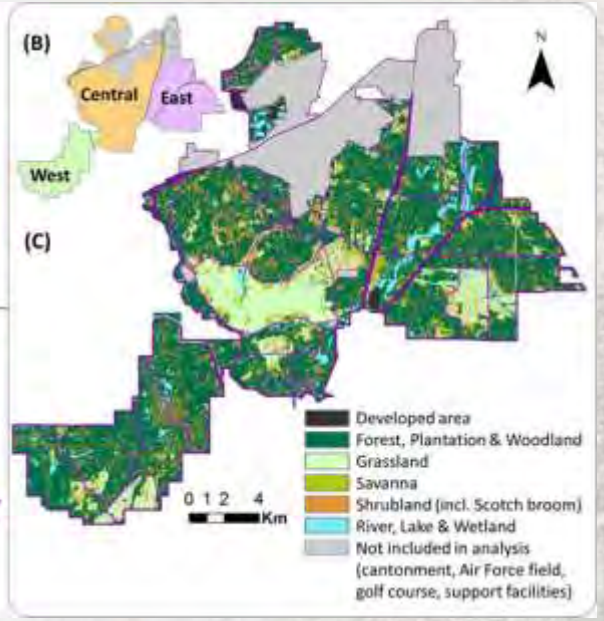


FORT JBLM



Notes:

1. Scotch broom encroachment eliminates prairie habitat for sensitive species;
2. Scotch broom encroachment makes open lands unsuitable for training, and hence reduces training capacity;
3. Scotch broom encroachment prevents tree seedling, planting, establishment, and hence decreases timber production and carbon sequestration;
4. Root rot infestation clears up forest for scotch broom invasion;
5. Root rot infestation impedes tree growth and leads to tree mortality, which reduces ecosystem services from in forest;
6. Root rot infestation creates hazards from dead trees, thus diminishes desired training environment;
7. Shrinkage in prairie habitat for sensitive species is likely to trigger more strict training area restrictions;
8. More strict training restrictions diminish available environment for training;
9. Reduction in available training environment limits training activities;
10. More habitats for candidate species may potentially decrease areas available for intensive training;
11. More frequent and soil disturbing training activities reduce quality of prairie habitat;
12. Training activities can suppress scotch broom encroachment by firing practices and vehicle movement;
13. Training activities involving more soldier and vehicle movement can enlarge scotch broom expansion;
14. Training involving more soldier and vehicle movement proliferates root rot infestation in forest;
15. Tactical gunnery training activities in forest can hinder tree growth, and hence reduce timber quality, quantity and carbon sequestration;
16. Larger amount of timber production may potentially decrease forest canopy available for training.



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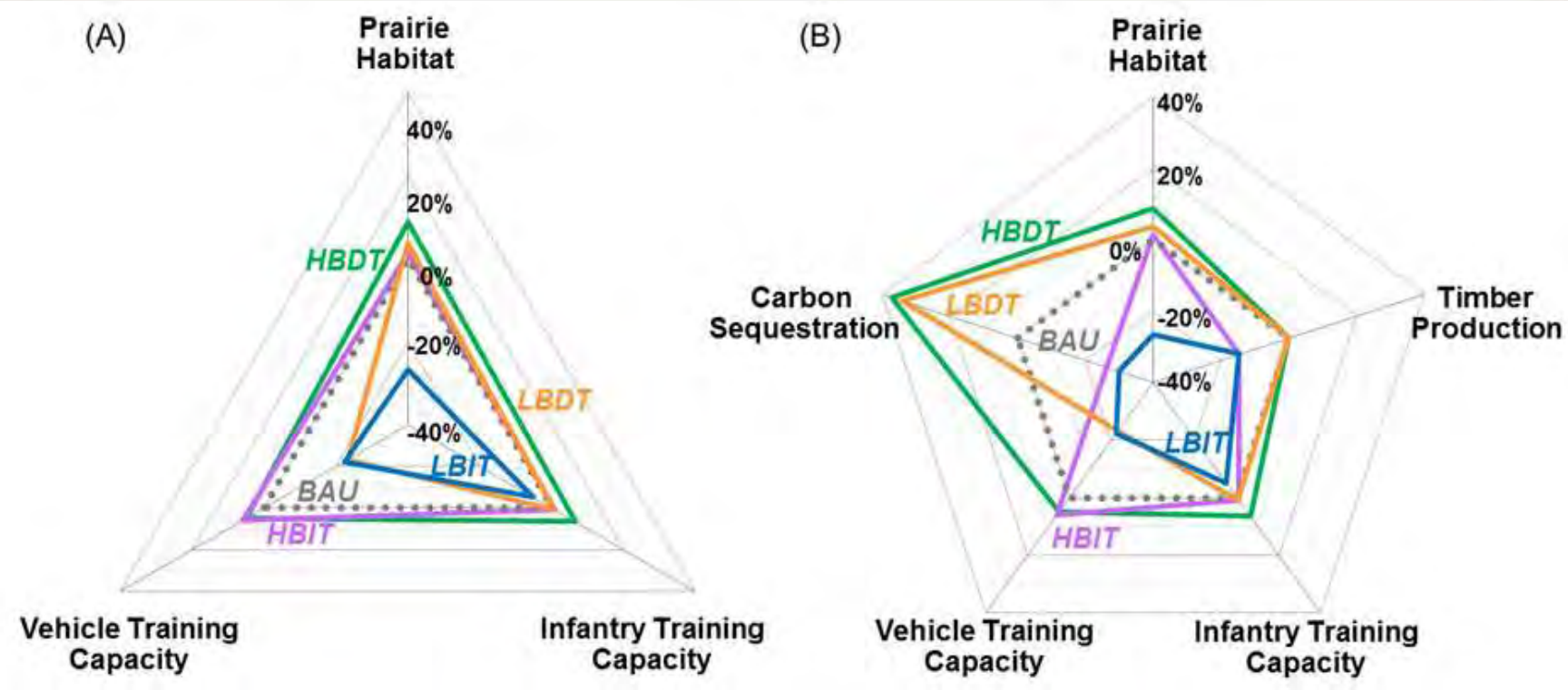
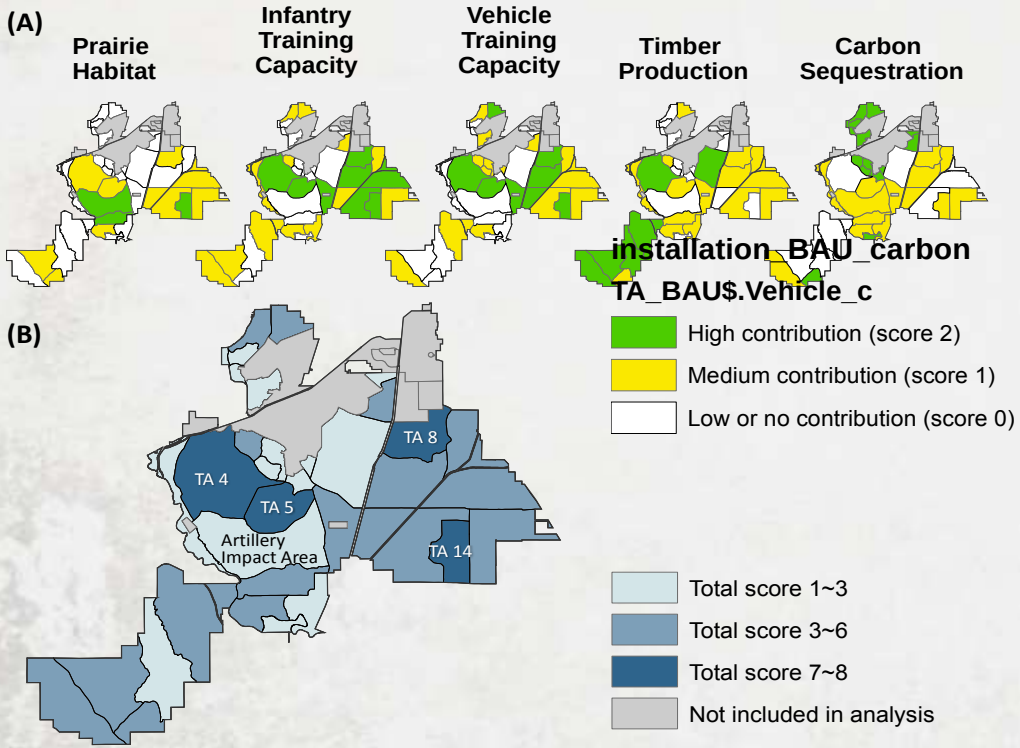

(A)
Prairie Habitat
40%
20%
0%
-20%
-40%
HBDT
LBDT
LBIT
BAU
HBIT
Vehicle Training Capacity
Infantry Training Capacity
(B)
Prairie Habitat
40%
20%
0%
-20%
-40%
HBDT
LBDT
LBIT
BAU
HBIT
Carbon Sequestration
Timber Production
Vehicle Training Capacity
Infantry Training Capacity

FORT JBLM

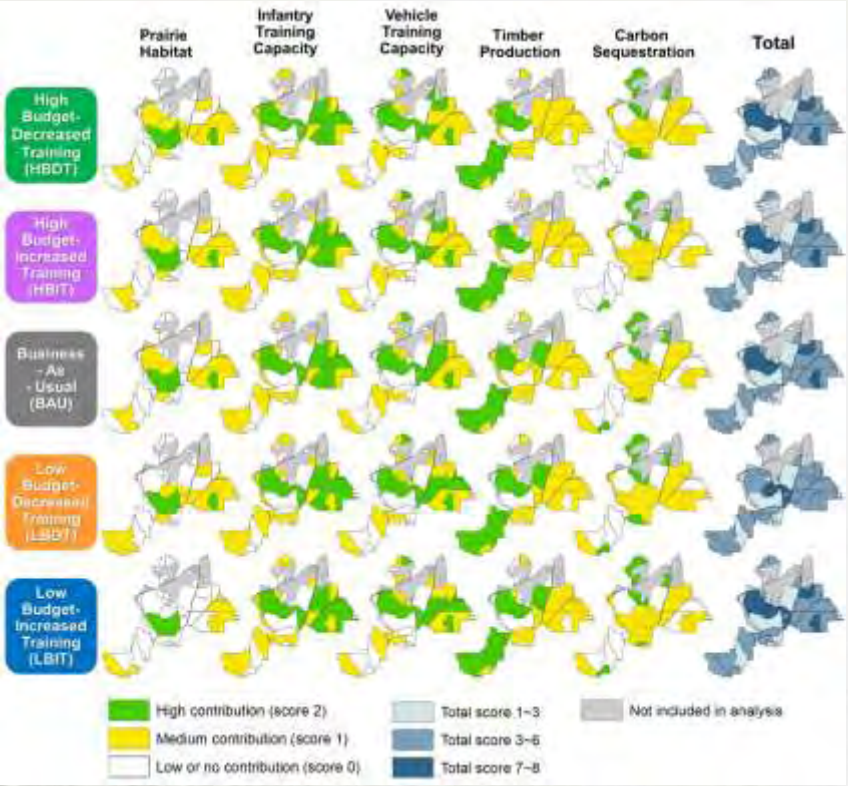


High-contribution >= 50% of the total ecosystem service provision under BAU.

Medium-contribution additional 40% of the total ecosystem service provision (at least 90% of total service altogether with green zones).

Low- or no-contribution zones (white, score 0) contribute to the remaining 10% ecosystem service provision in total.

FORT JBLM



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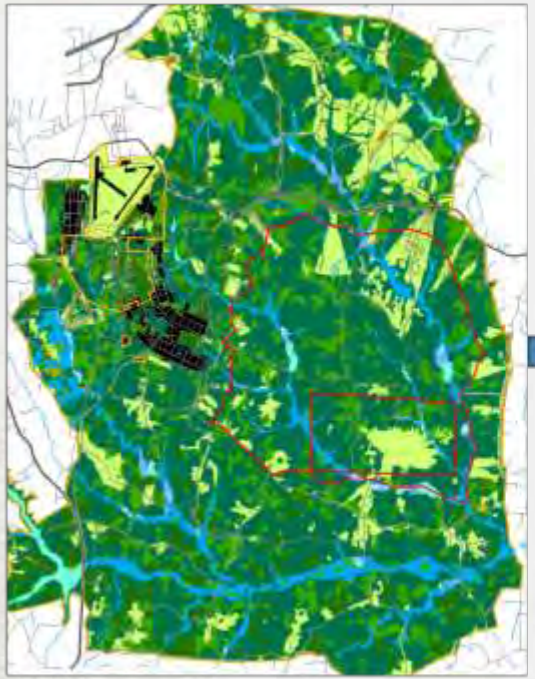
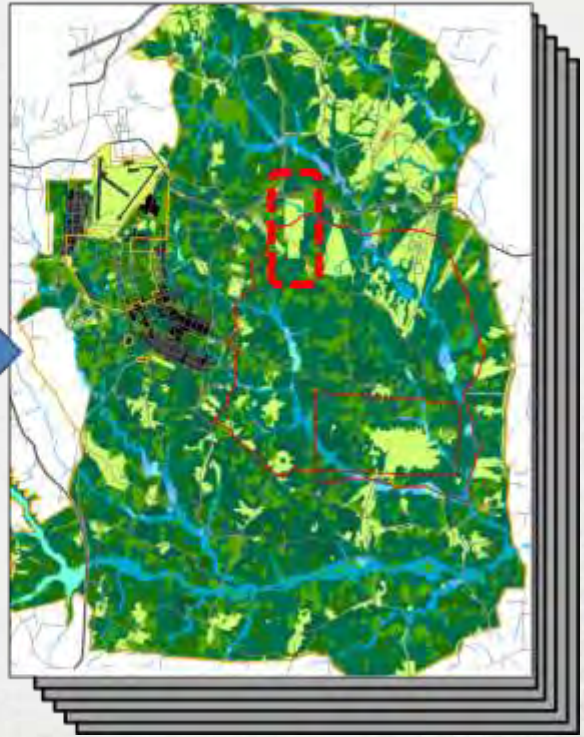
FORT PICKETT

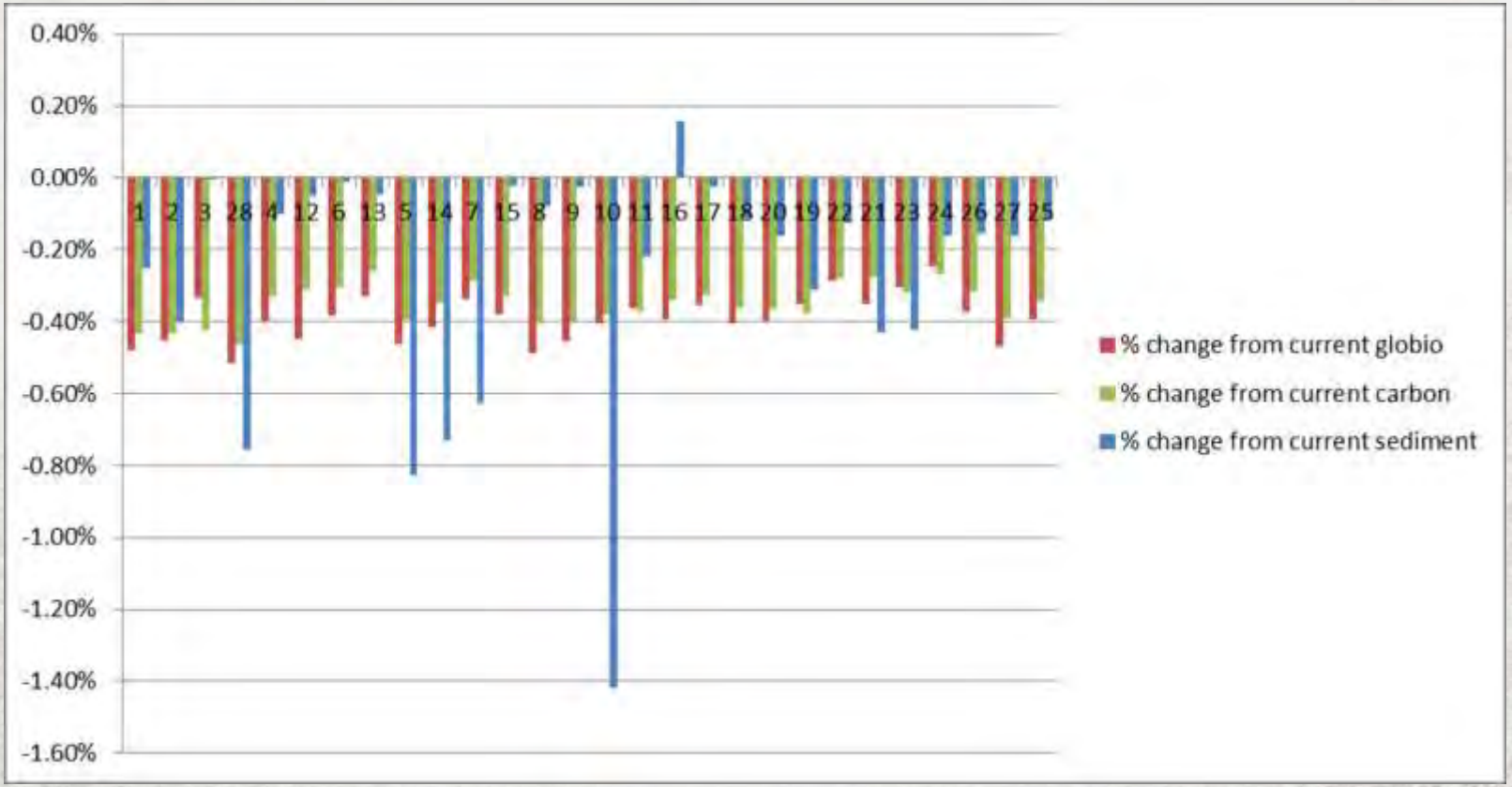
Baseline—current LULC

28 alternative scenarios





FORT PICKETT



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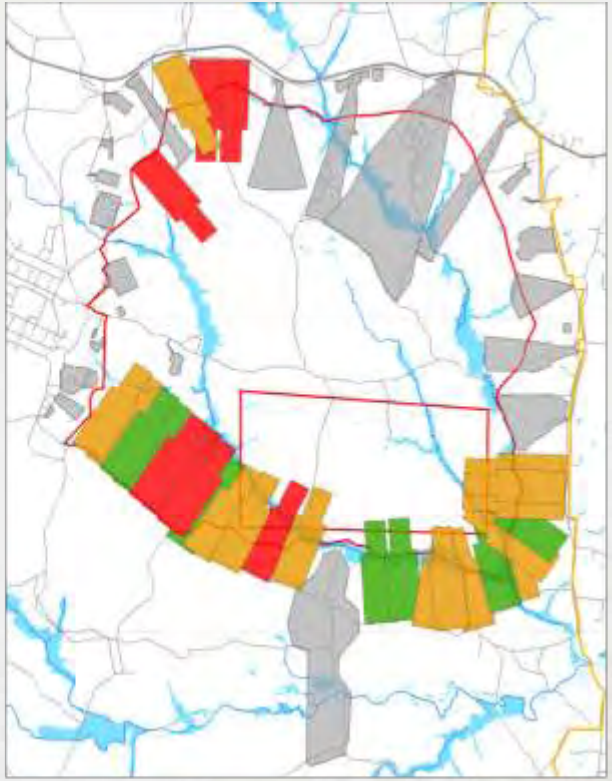
natural capital PROJECT

Aggregate impact on all three services

(assuming equal weight on % loss compared to current)

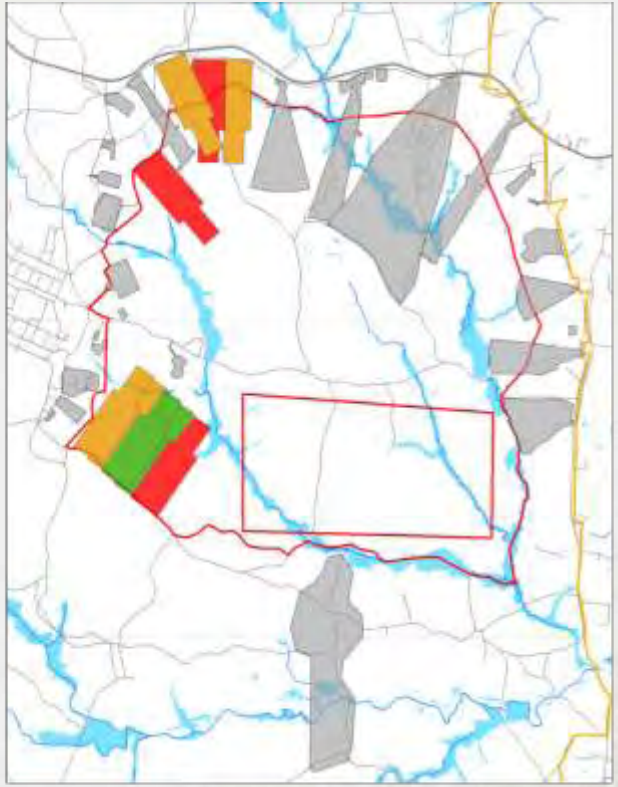
Red: high (top 25%)
Amber: medium
Green: low (bottom 25%)



FORT PICKETT

Aggregate impact on all three services within **feasible** locations (assuming equal weight on % loss compared to current)

Red: high (top 25%)
Amber: medium
Green: low (bottom 25%)



Q&A