Wyoming Power GIS Project

Brief

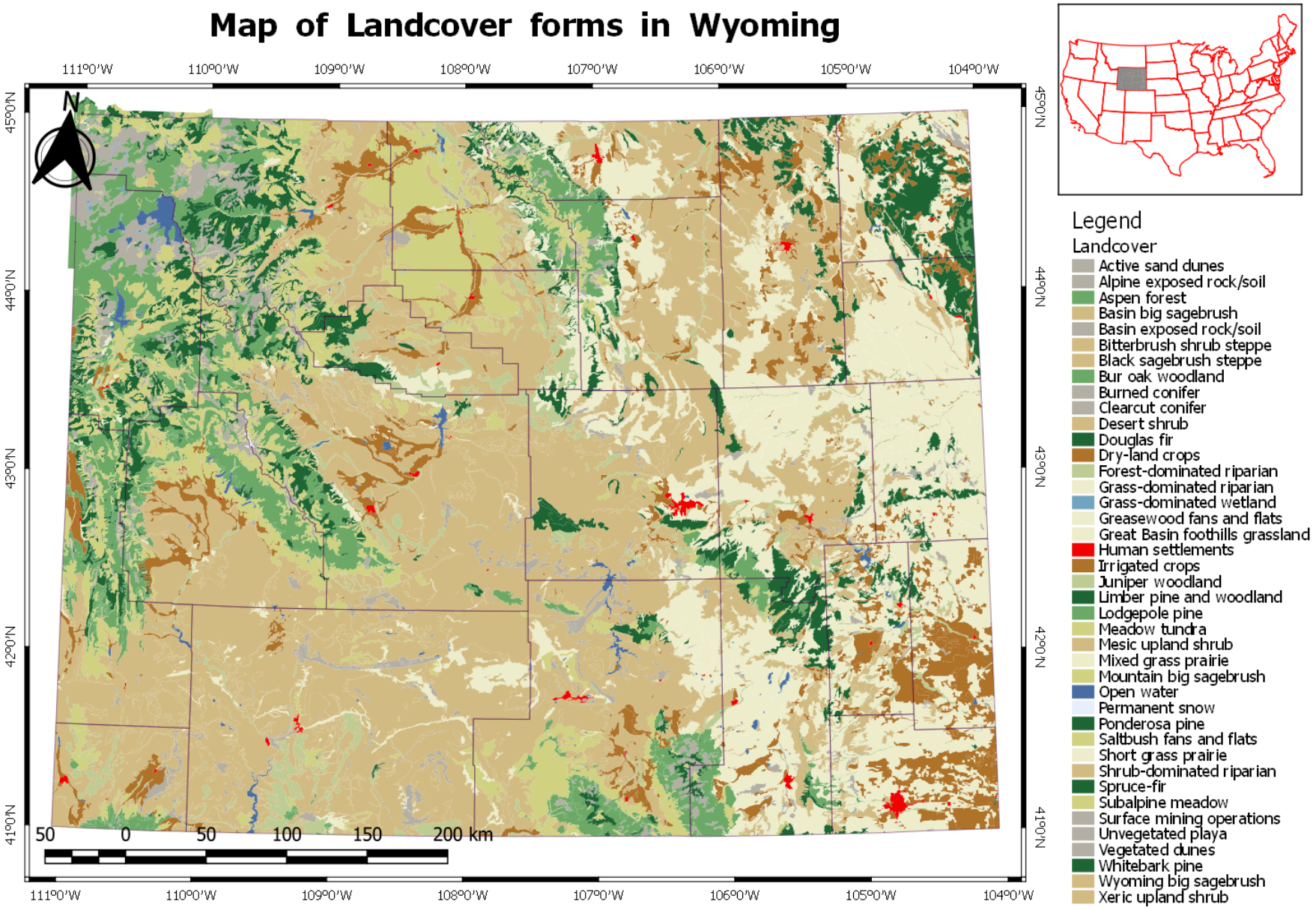
Due to increasing customer demand the Wyoming Power Corporation has announced an interest in expanding its power generation production within Wyoming state. It wishes to explore both potential wind power locations and remaining oil deposits and requires a selection of maps to be produced.

Tasks

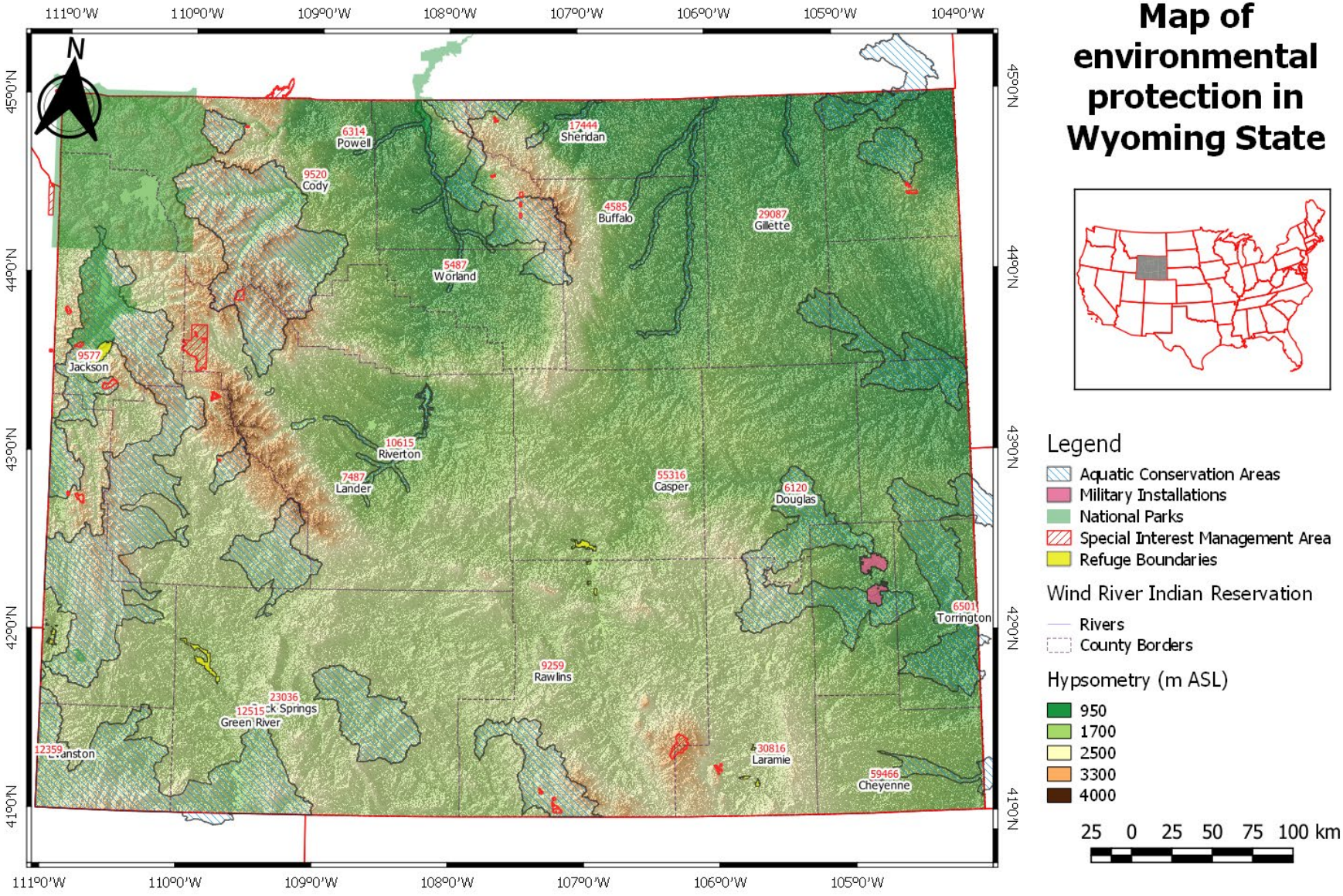
Produce the following maps:

1. A general landcover, including county borders and major towns over 4000 inhabitants.
2. Protected areas (including indigenous reservations, national parks, National Forestry Service refuge areas, military installations, aquatic conservation areas).
3. Oil deposits that are not in protected areas and within 50Km of a main road.
4. Spatial distribution of mean annual precipitation.
5. Existing green energy generation.
6. Projected wind speeds across Wyoming State at a height of 80m.
7. Proposed locations for 3 different wind farms of at least 50 turbines (spaced 2300m apart) which are within 50Km of any existing power network.
8. Basic 3D models of general area and each of the 3 proposed wind farms.

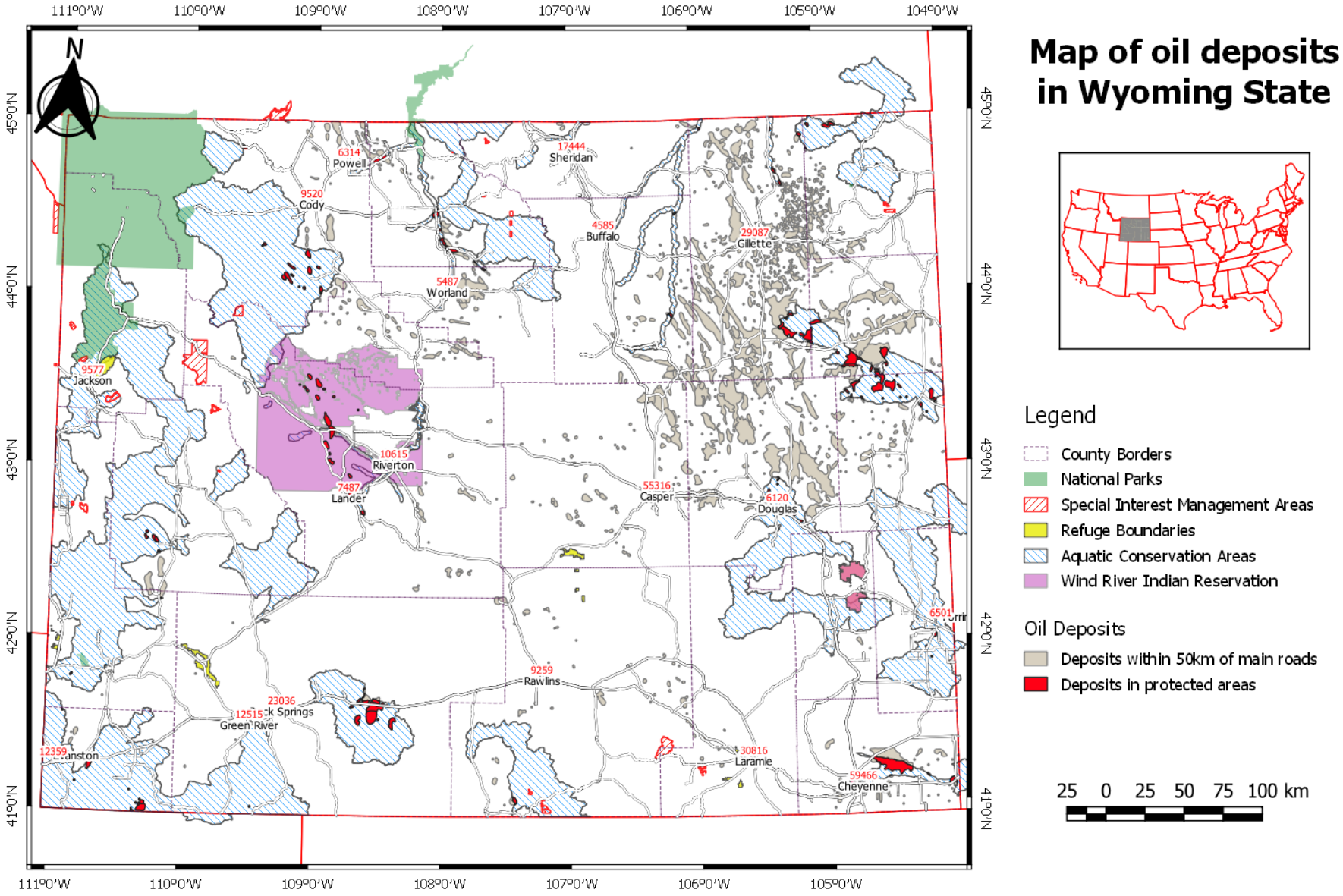
1) A general landcover, including county borders and major towns over 4000 inhabitants.



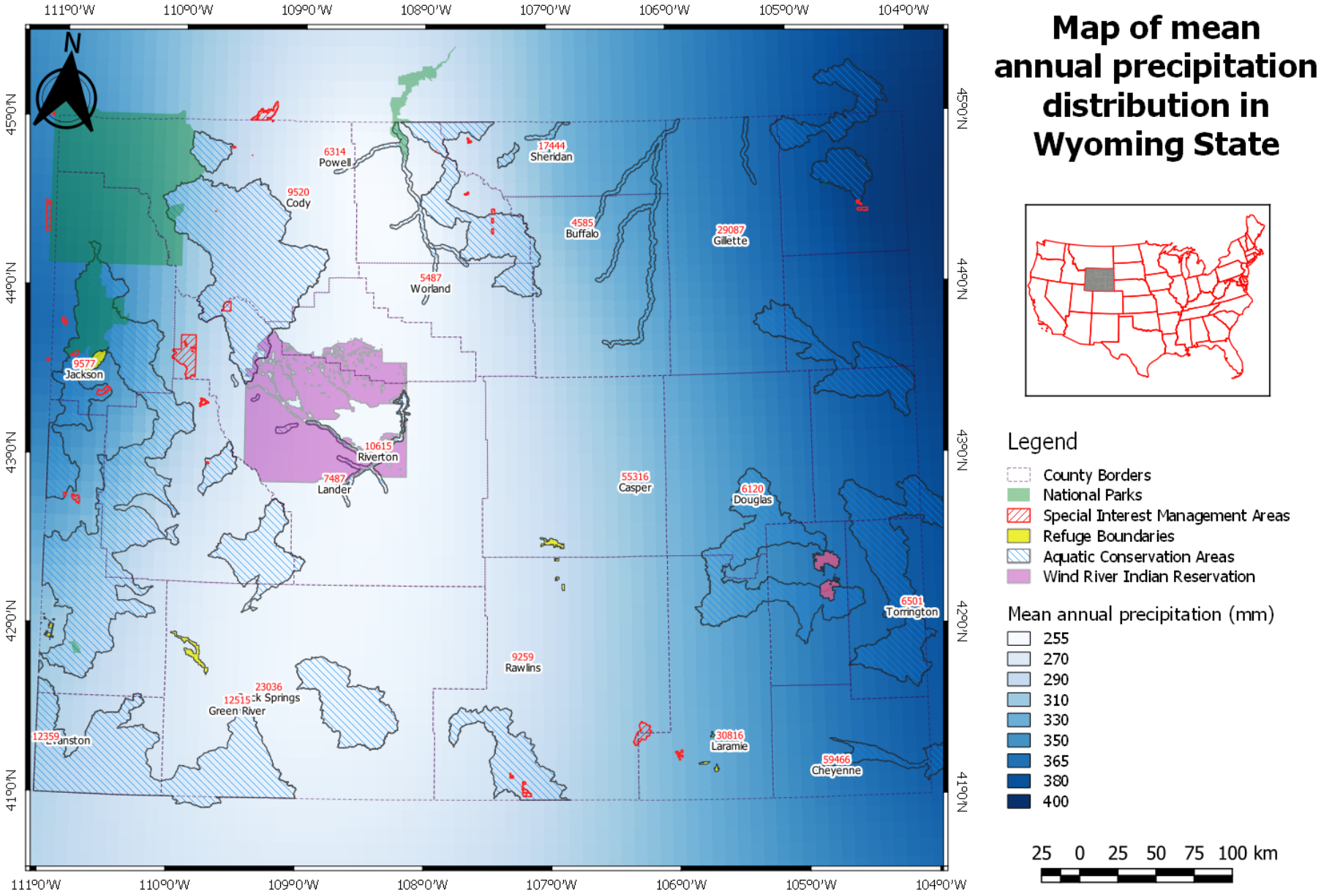
2) Protected areas (including indigenous reservations, national parks, National Forestry Service refuge areas, military installations, aquatic conservation areas).



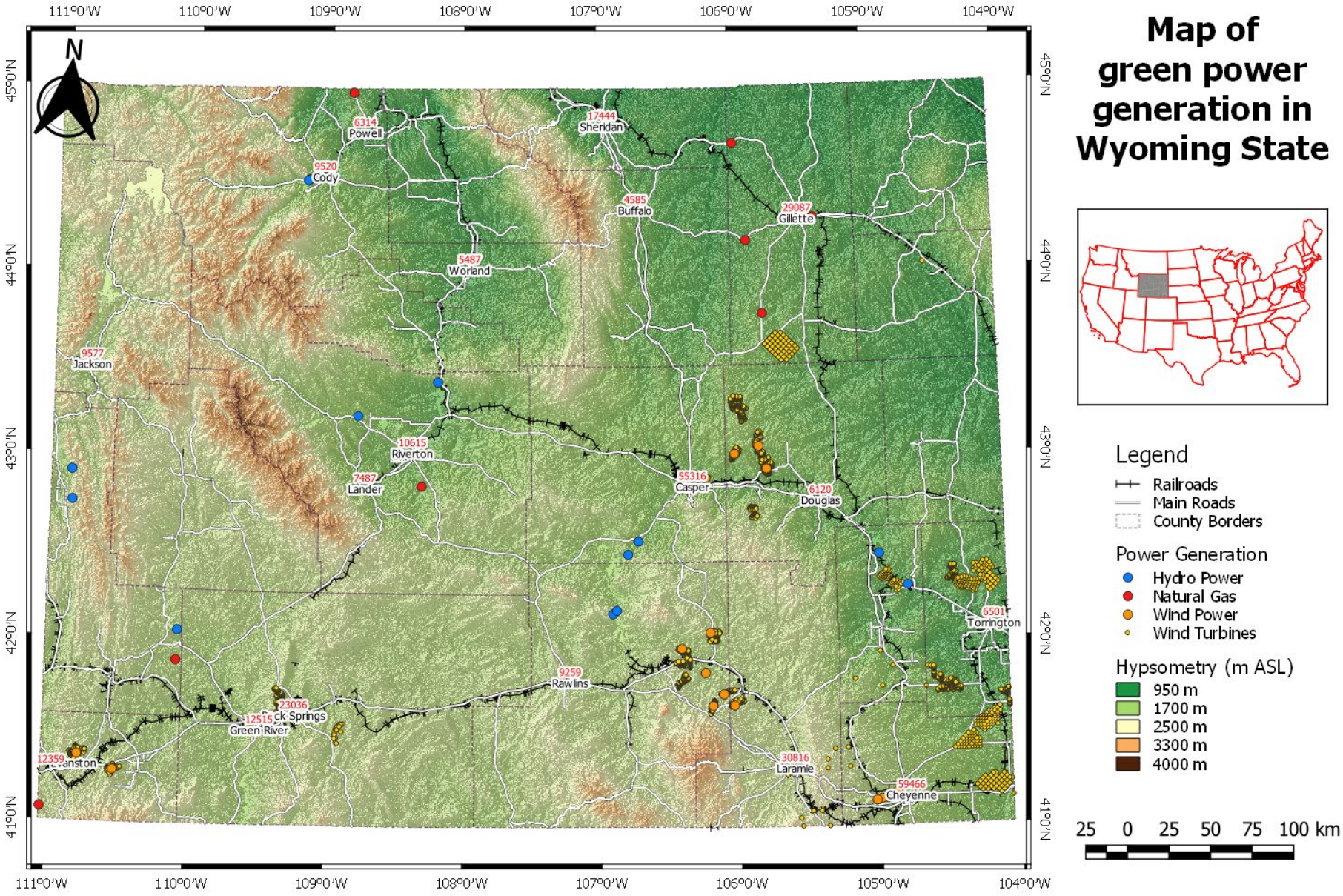
3) Oil deposits that are not in protected areas and within 50Km of a main road.



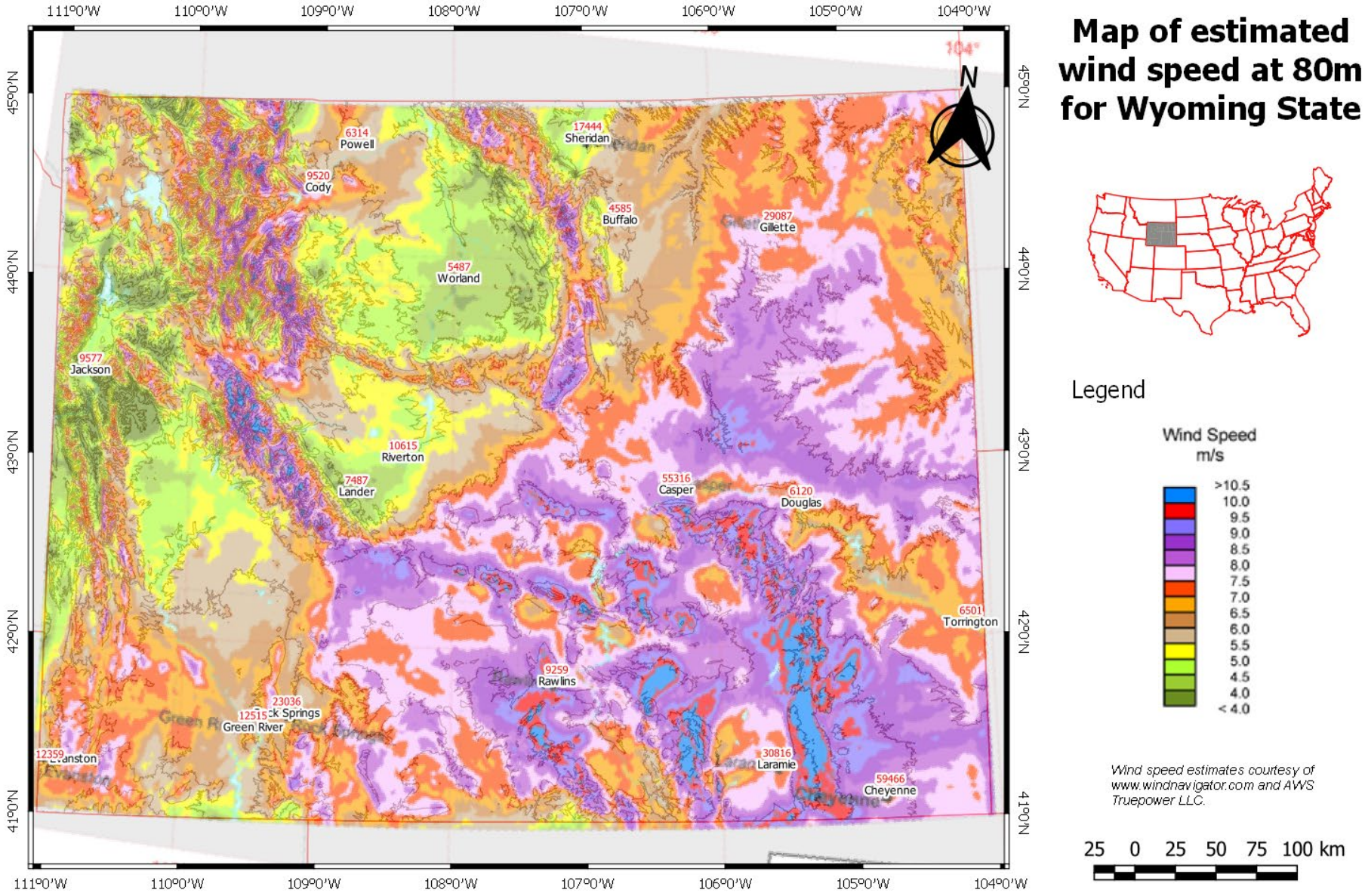
4) Spatial distribution of mean annual precipitation



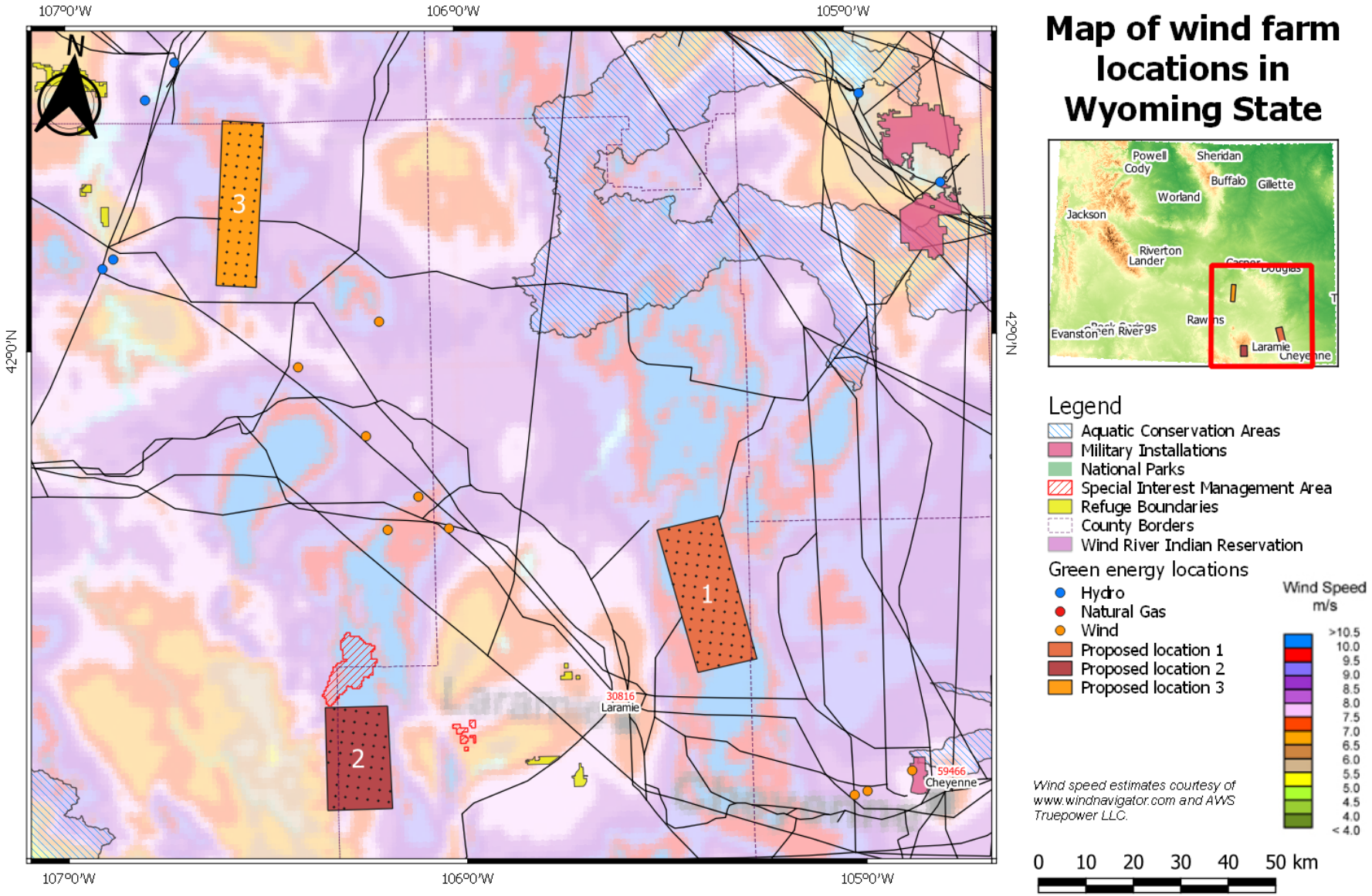
5) Existing green energy generation



6) Projected wind speeds across Wyoming State at a height of 80m.



7) Proposed locations for 3 different wind farms of at least 50 turbines (spaced 2300m apart) which are within 50km of any existing power network.



8) Basic 3D models of the general Wyoming area and location of each of the 3 proposed wind farms.

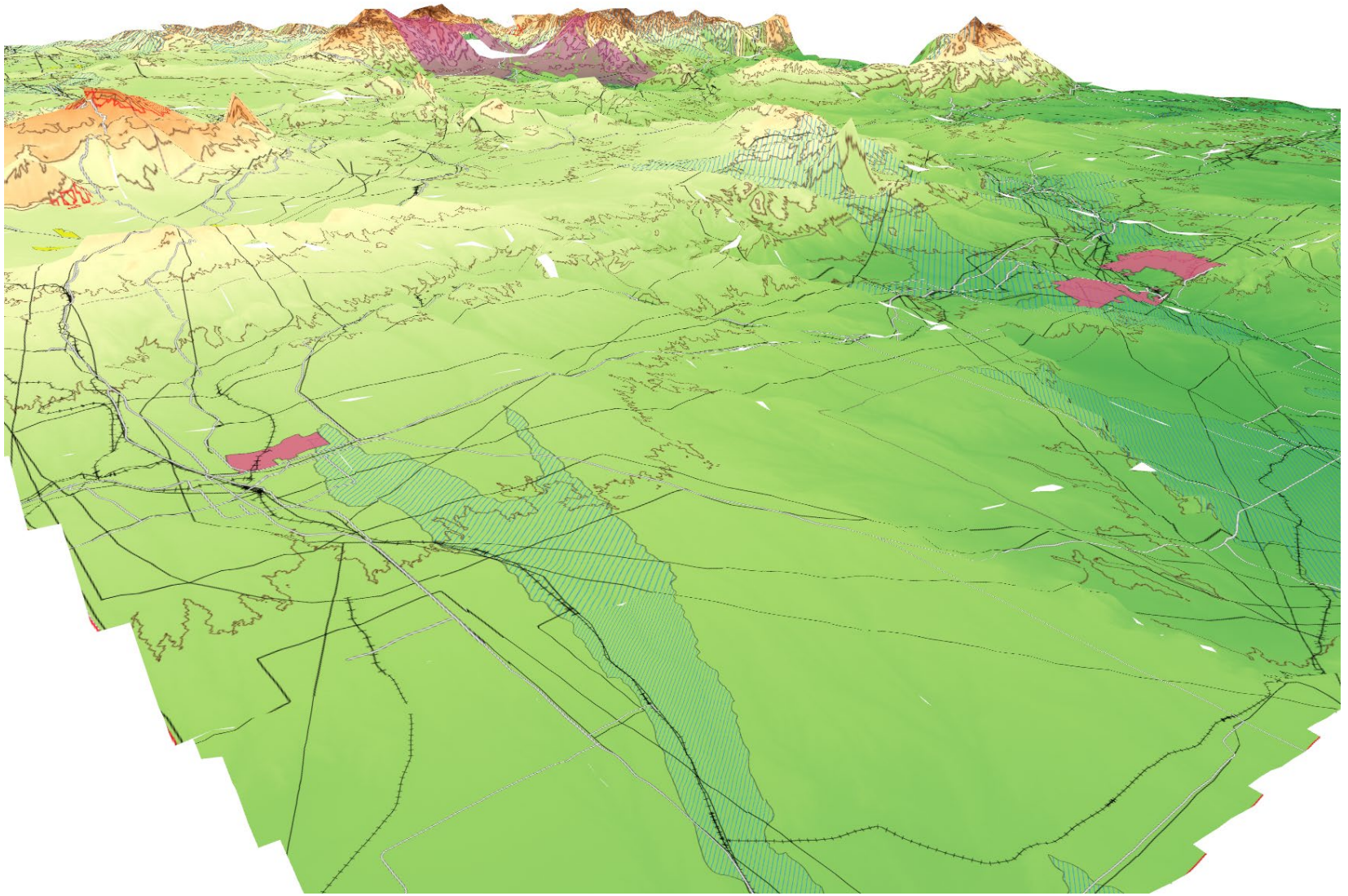


Fig 1 - General area 3D model of Wyoming topography.

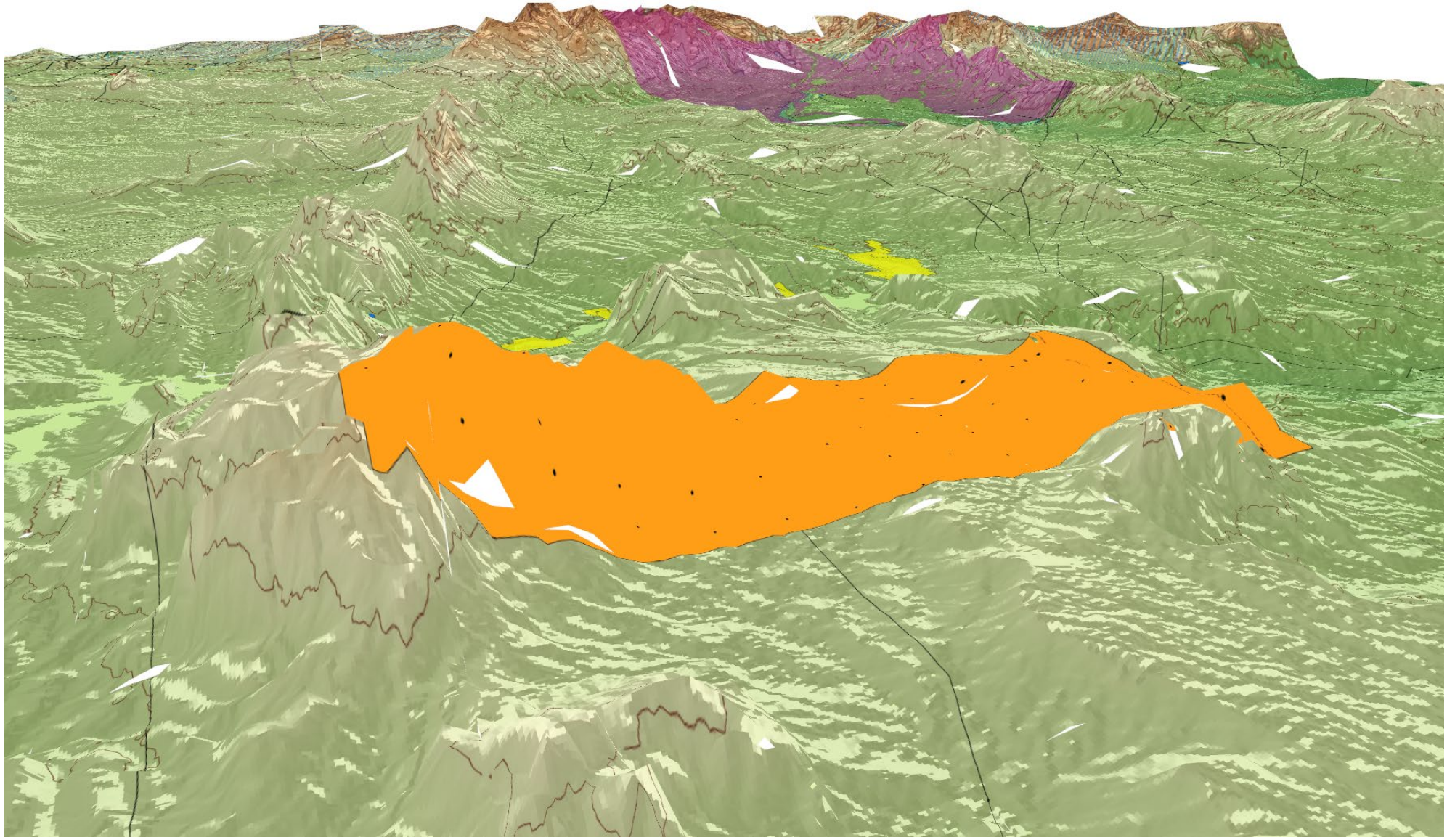


Fig 2 - 3D model of proposed windfarm Location 1.

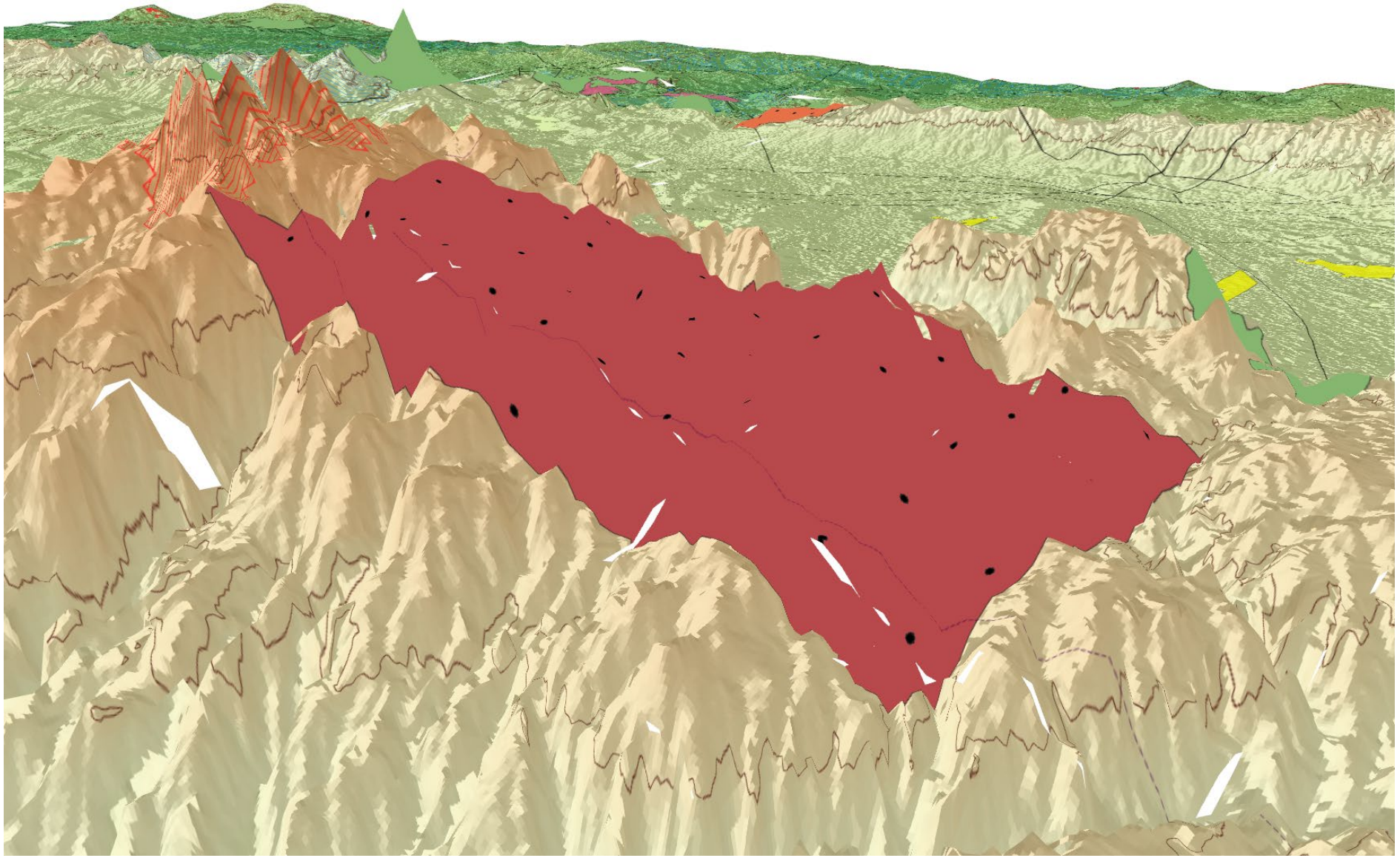


Fig 3 - *3D model of proposed windfarm Location 2.*

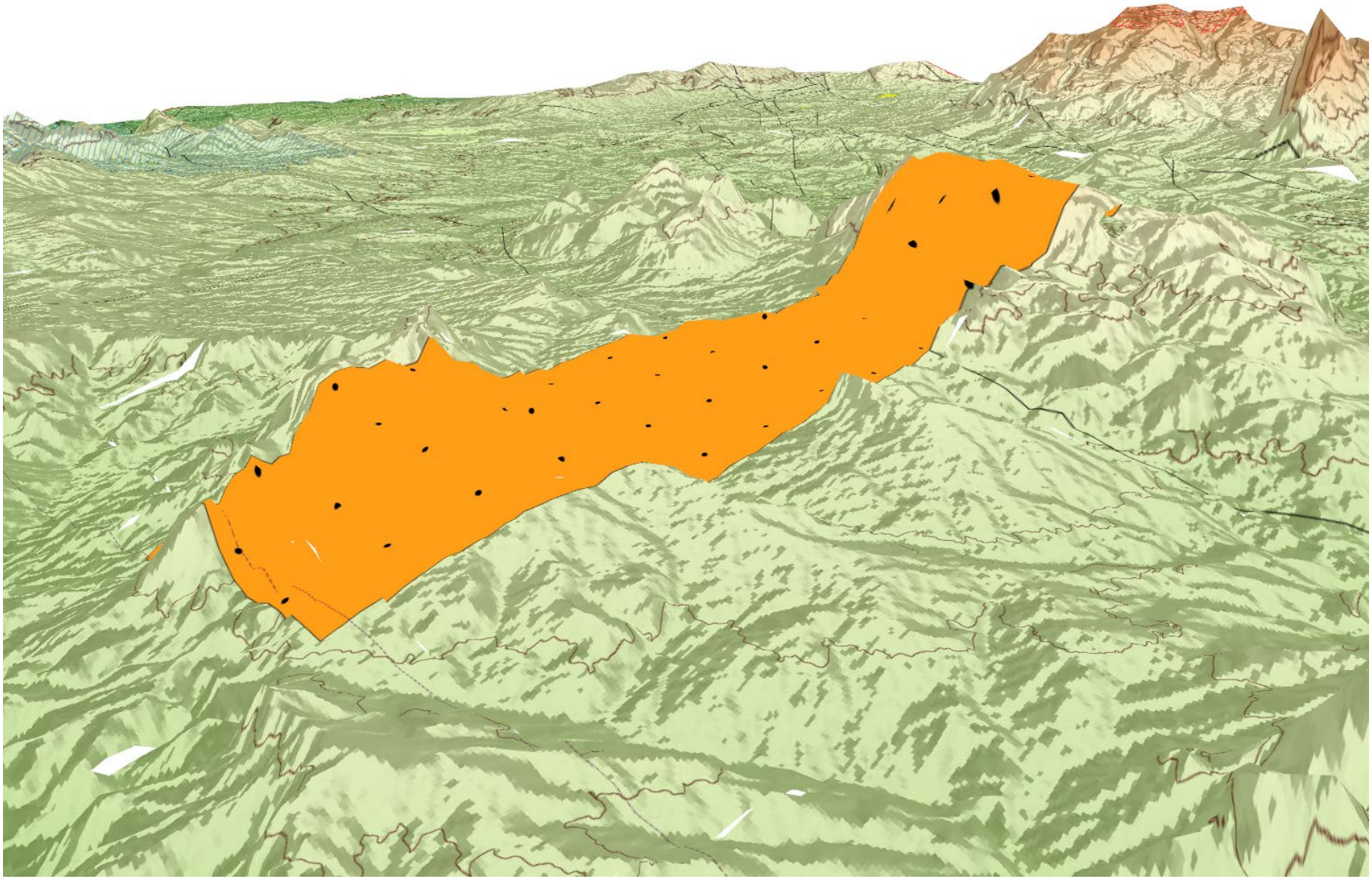


Fig 4 - *3D model of proposed windfarm Location 3.*

References:

SRTM data from Consortium for Spatial Information http://srtm.csi.cgiar.org/srtmdata/

Transportation networks, utilities, facilities and structures, demographic, climate, boundaries, environmental and conservation data from Wyoming Geospatial Hub https://data.geospatialhub.org/

80m windspeed charts from AWS Truepower and the National Renewable Energy Laboratory https://dashboards.awstruepower.com/

All charts produced in QGIS 3.14 in WGS84 UTM 11 format.

(Higher resolution images are available as separate PDFs in the images folder.)

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