

NAS FALLON



Geothermal Research Observatory

FALLON
FORGEFORGE
U.S. Department of Energy

fallonforge.sandia.gov

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Our FORGE Goals

A dedicated field laboratory where

- Subsurface scientific and engineering community can develop, test, and improve new technologies and techniques in an ideal EGS environment
- The geothermal and other subsurface communities gain a fundamental understanding of the key mechanisms controlling EGS success.
- Design and test a methodology for developing large-scale, economically sustainable heat exchange systems
- A comprehensive instrumentation and data collection effort will capture a higher-fidelity picture of EGS creation and evolution processes than any prior demonstration in the world
- A dedicated FORGE allows for the highly integrated comparison of technologies and tools in a controlled and well-characterized environment, as well as the rapid dissemination of technical data to the research community, developers, and other interested parties.

FORGE as a Field Laboratory

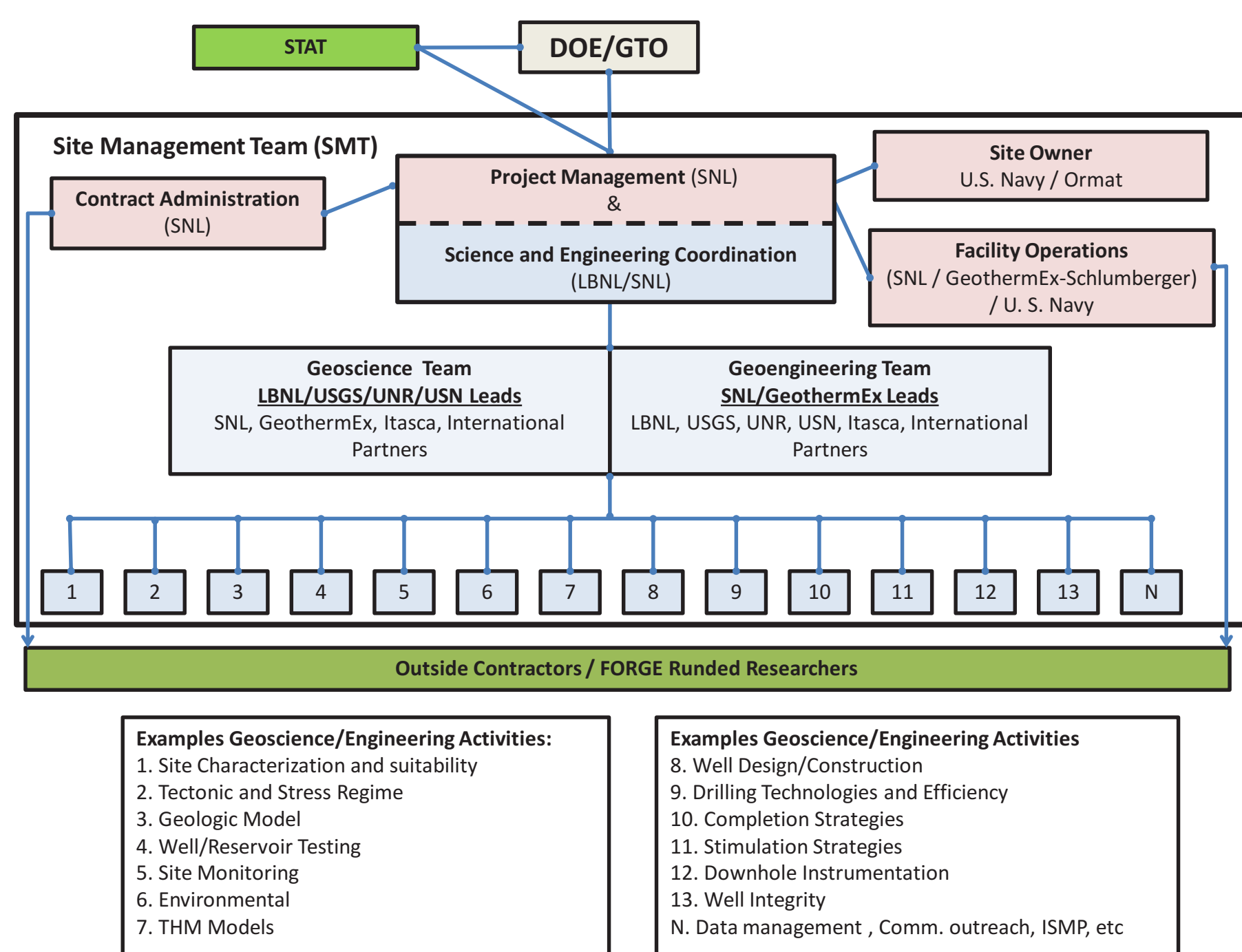
Continuous site characterization through life of FORGE

- Emphasized and conducted at the earliest opportunity
- Needed to complement the extensive Phase 1 efforts
- Update the geologic model as more knowledge is gained

Continuous and extensive monitoring

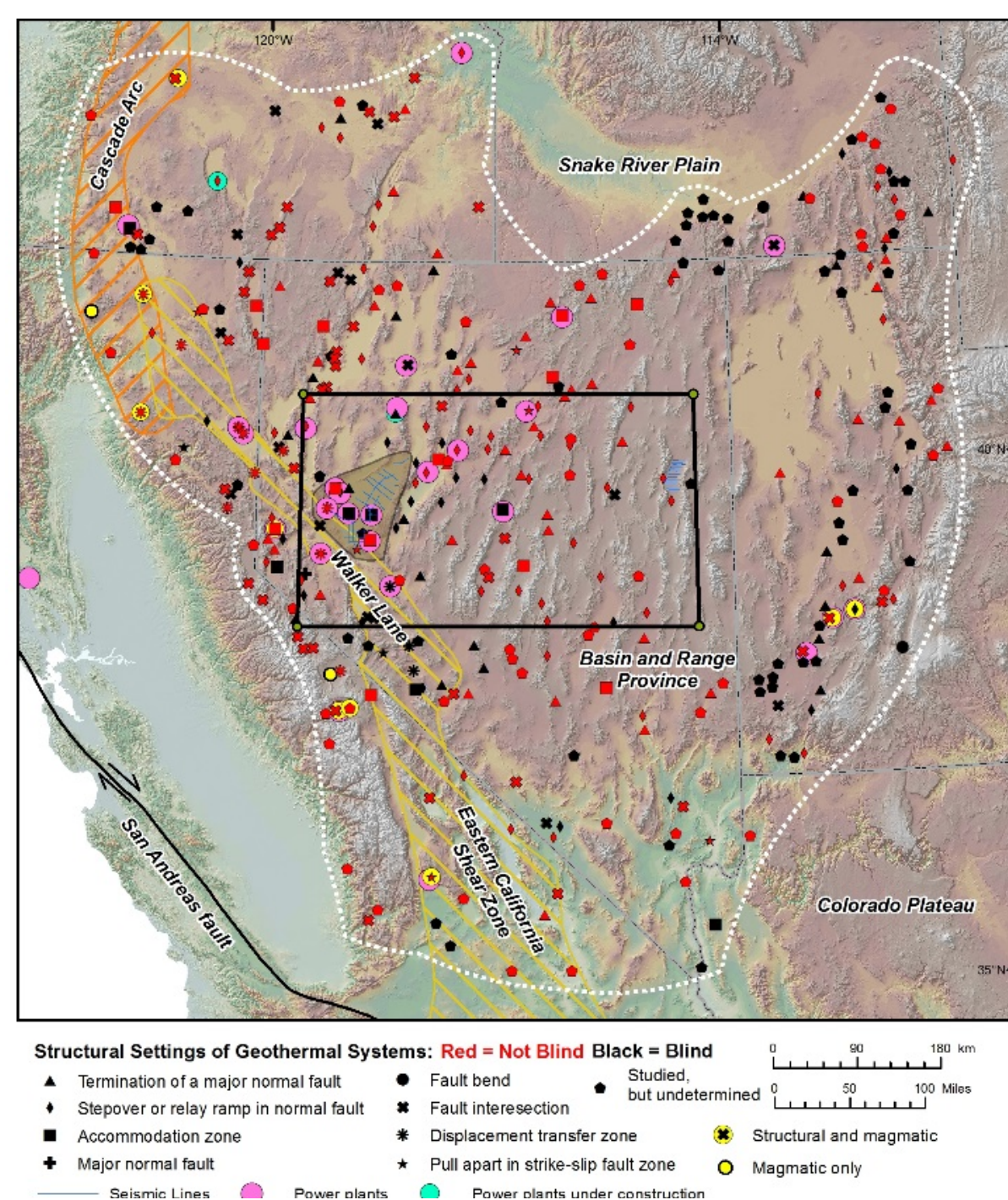
- Optimize volumetric coverage
- Microseismic monitoring at depth
- Other relevant technologies in conjunction with R&D researchers
- Holes of opportunity

Our Site Operations Structure



Site Selection Process for FORGE

- Reviewed several geothermal systems across a wide swath of the Great Basin
- Review built on many previous and ongoing studies by team members
- Carefully considered several key parameters:
 - No hydrothermal system
 - Temperature (175-225 °C)
 - Depth (1.5- 4 km)
 - Low permeability
 - Crystalline rocks
 - Favorable stress regime
 - Favorable land status
 - Favorable infrastructure
 - Willing partners



Why Fallon?

- Land status secure
 - Naval Air Station Fallon (NASF)
 - Ormat leased and owned land
 - 4.5 km² FORGE site
 - 40 km² monitoring area
- Existing infrastructure
- Regional geologic setting
 - Geologic
 - Geochemical
 - Geophysical
- Temperatures
- Permeability
- Potential crystalline targets and reservoirs
- No hydrothermal system

Abundant Well Data

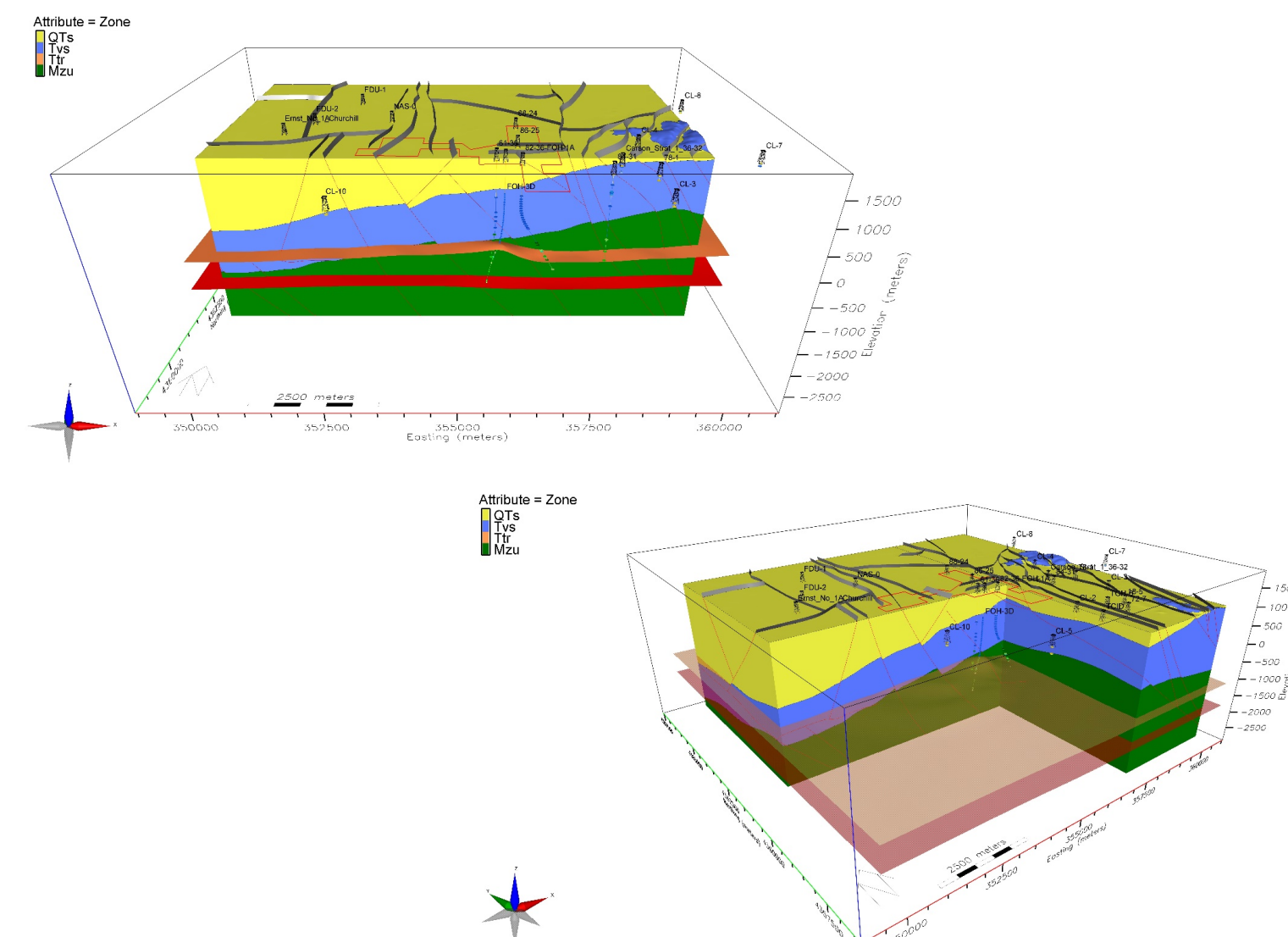
- 46 Geothermal and TG wells
 - 12 geothermal wells
 - 34 temperature-gradient wells
 - 7 geothermal wells, 4 TG holes on FORGE site
 - 5 geothermal wells, 30 TG holes on NASF and Ormat monitoring areas

Favorable Infrastructure

- Fallon FORGE site
 - Excellent network of roads on site
 - U.S. Hwy-50 nearby
 - Abundant wells
 - Available storage
 - Established water and electrical resources
- Town of Fallon 12 km to NW – abundant services
- Large city of Reno 100 km to west

3-D Geologic Model – Comparative Analysis

- Fallon FORGE site
 - Structurally simple west-tilted half graben
 - Widely spaced normal faults
- Contrasts with more complex structural settings at conventional hydrothermal systems (e.g. Bradys)
- Further evidence of lack of a hydrothermal system at Fallon



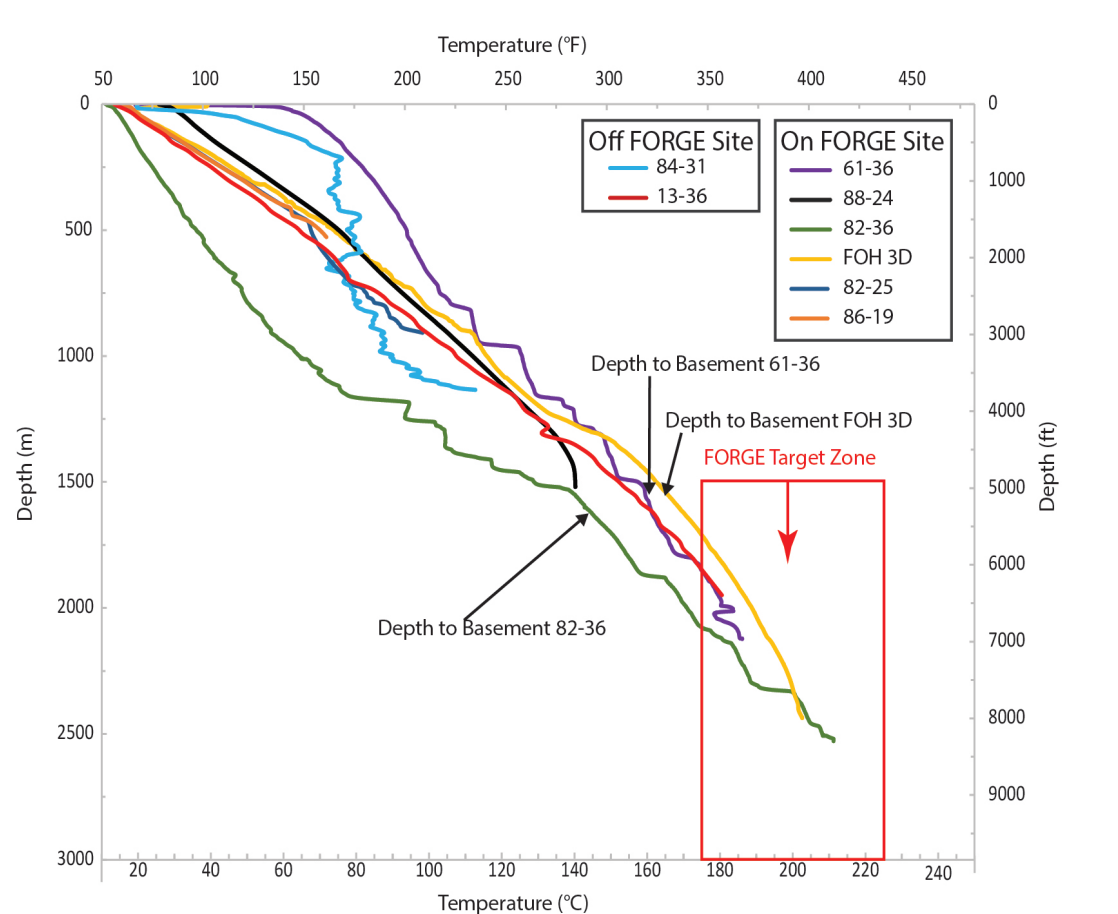
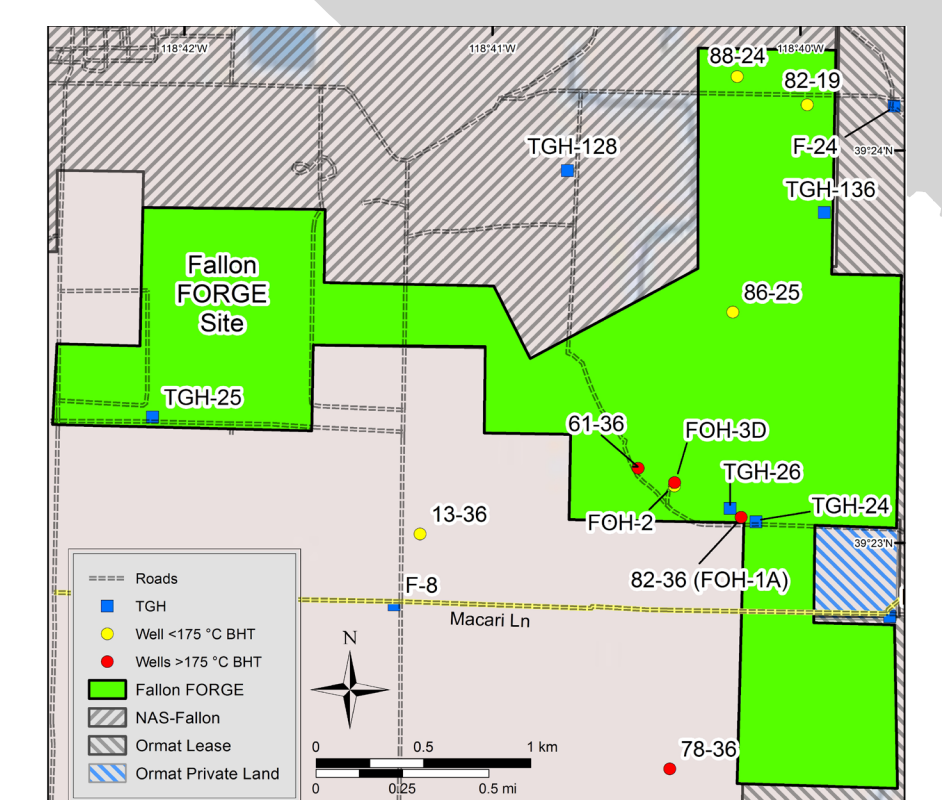
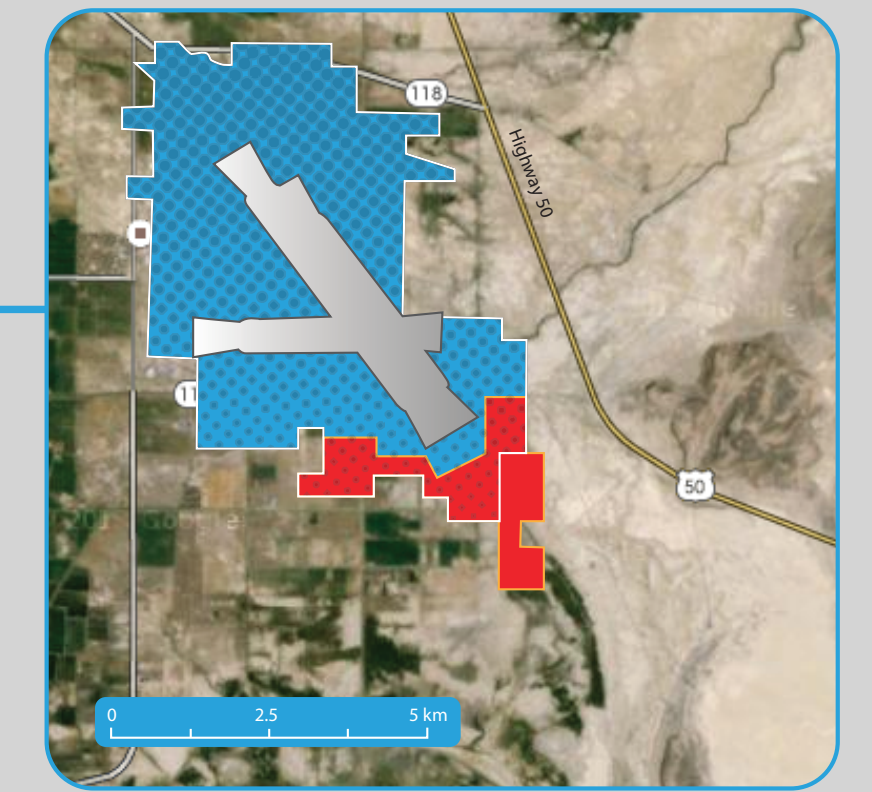
Acknowledgements

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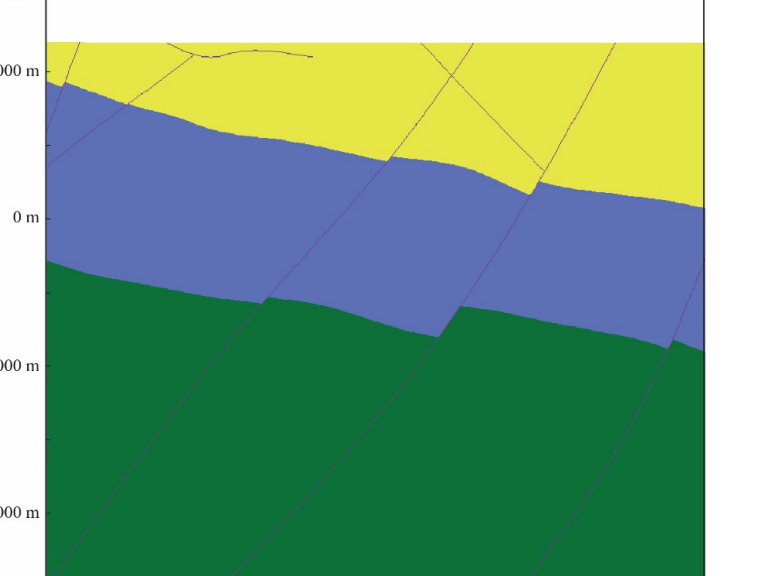
Where is it?

NAS Fallon

- The Navy's premier integrated strike warfare training facilities.



Fallon



Bradys

