Pueblo of Jemez Geothermal Feasibility Study

Presented by

Steve Blodgett

Director

Pueblo of Jemez

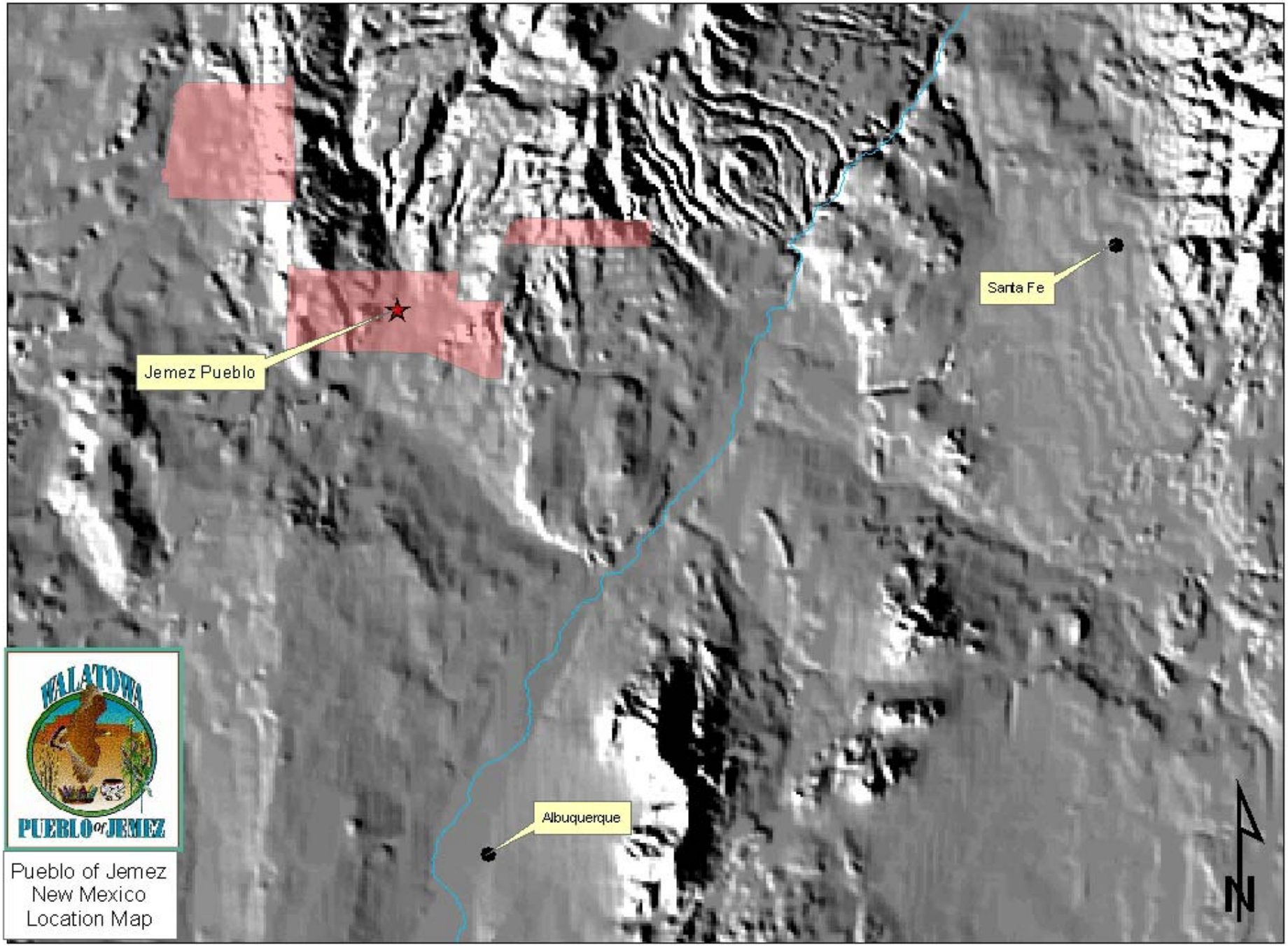
Department of Resource Protection

Background

- Project funded by DOE under contract DE-FC36-02G012104
- Previous studies in 1988, 1990, 1991, 1992
- Evaluating geothermal potential of Red Rocks area on northern Jemez Reservation (this study)

Study Organization

- Phase I– Geothermal Reservoirs and Geothermal Drilling at Jemez Pueblo by Jim Witcher, NMSU/SDTI
- Compilation of four reports (district heating, native herbs greenhouse, tree seedling greenhouse, spa market analysis) by Jack Whittier, McNeil Technologies
- Phase II– Geologic mapping of Red Rocks area by Dr. Shari Kelley
- Geophysical surveys of Red Rocks area by Geophysical Solutions



Pueblo of Jemez
New Mexico
Location Map

Pueblo of Jemez
New Mexico
Red Rocks Area

Geothermal Reservoirs/Drilling

- Valles Caldera outflow plume
- Soda Dam, Jemez Springs, other hot springs in Jemez Valley
- Indian Springs well (JP-1)

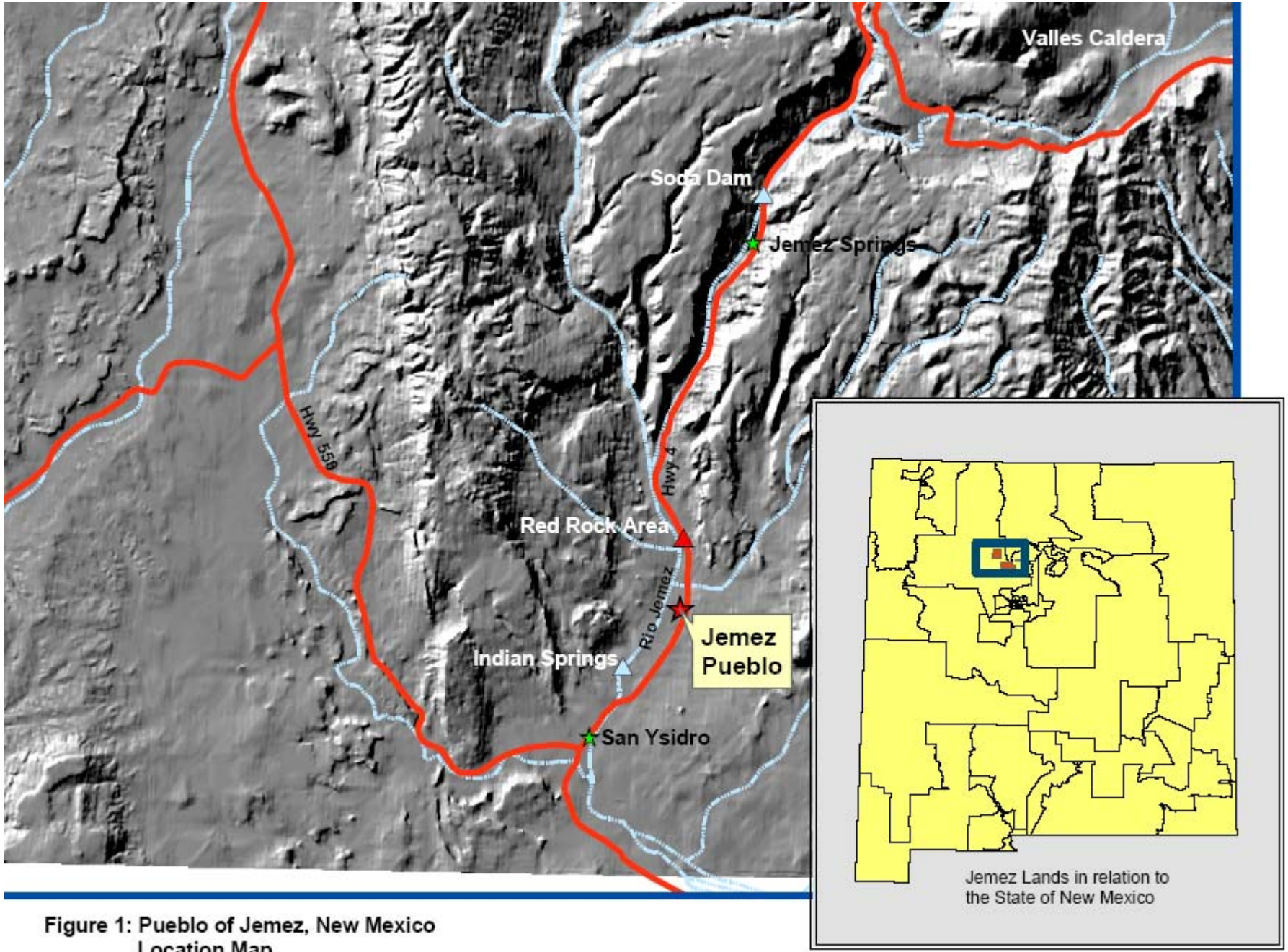


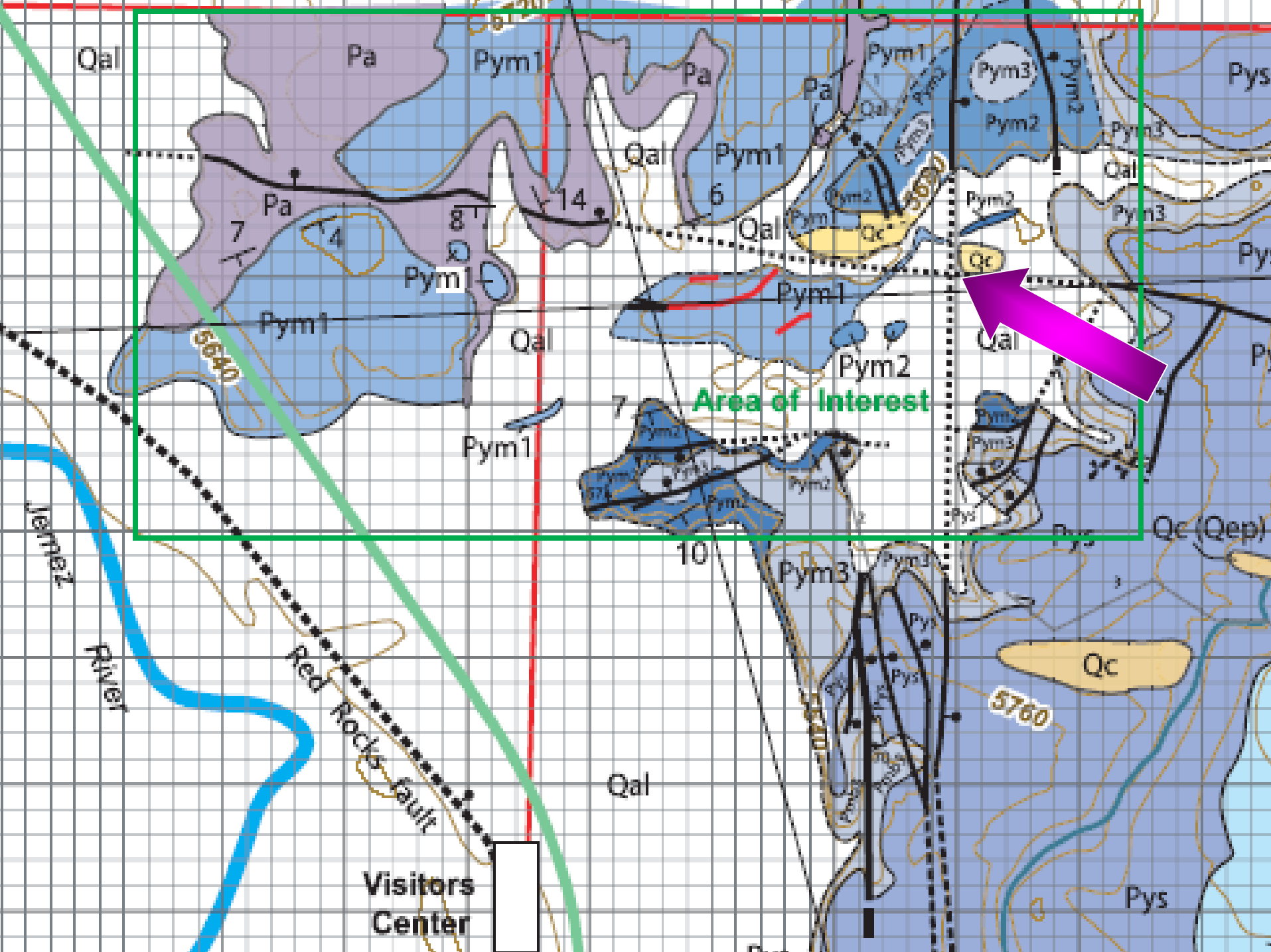
Figure 1: Pueblo of Jemez, New Mexico Location Map

Business feasibility studies

- Native herbs greenhouse
- District heating system
- Tree seedling greenhouse
- Commercial spa

Phase II-- Geologic mapping of Red Rocks area– Dr. Shari Kelley, NM Tech

- Map scale= 1: 6000
- Several previously unrecognized faults mapped
- Two fault sets (N-S and E-W) intersect in area of interest
- Calcite veins outcrop along E-W fault

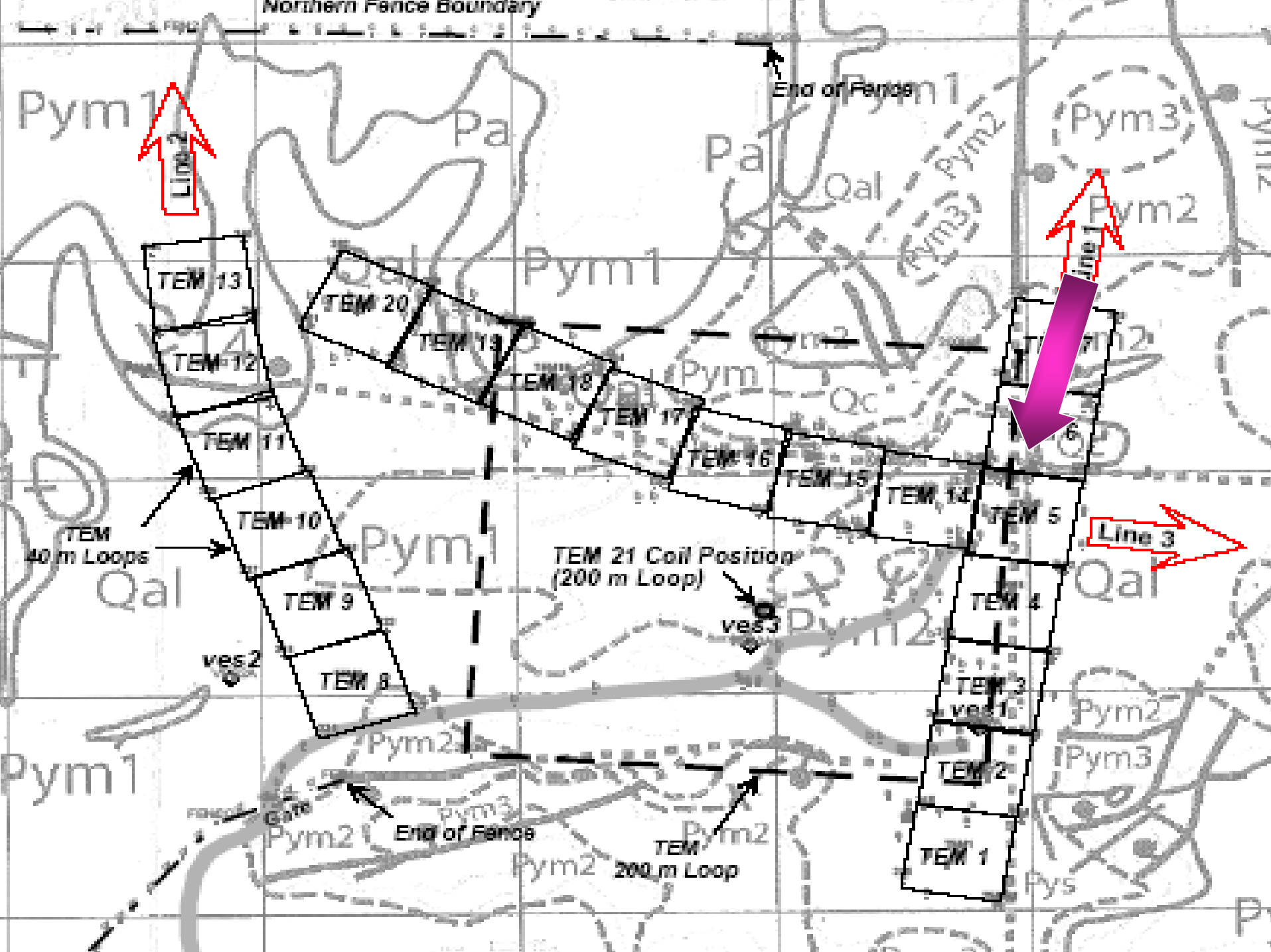


Qal
Pa
Pym1
Pym2
Pym3
Pys
Qc
Qc (Qep)
Area of Interest
Jemez
River
Red Rocks fault
Visitors
Center
5640
5760

Geophysical surveys

- Time Domain Electromagnetics
- Self Potential
- Terrain Conductivity
- Resistivity Sounding

- Conductive zone (confined aquifer in Abo Fm. channel sandstones?) located at 400 ft bgs along E-W fault trace


Northern Fence Boundary
End of Fence
Line 2
Line 1
Line 3
TEM 13
TEM 12
TEM 11
TEM 10
TEM 9
TEM 8
TEM 20
TEM 19
TEM 18
TEM 17
TEM 16
TEM 15
TEM 14
TEM 5
TEM 4
TEM 3
TEM 2
TEM 1
TEM
40 m Loops
TEM 21 Coil Position
(200 m Loop)
ves3
ves2
ves1
Gate
End of Fence
TEM
200 m Loop
Pym1
Pa
Qal
Pym2
Pym3
Qc
Pys

Conclusions

- Best geothermal drilling location in Red Rocks area is ~0.3 miles east of Hwy 4 along trace of E-W fault and 400 ft bgs.
- Best business opportunities for geothermal development at Jemez are commercial herb greenhouse and spa.
- Some potential for space heating.