



TECHNICAL GEOGRAPHY REFERENCE

Quadra State Landscape Annex

Nine state profiles separating administrative inventory signals from methane evidence, jurisdiction, and targeting implications.

GOVERNING PRINCIPLE

Scope note: Counts and program status are time-sensitive. Current regulator records and direct project measurement control. The annex supports screening; it is not a final eligibility, rights, engineering, or emissions determination.

Texas

INVENTORY SIGNAL 11,123 orphan wells at year-end 2025; more than 120,000 inactive wells.	PRIMARY GEOGRAPHY Permian counties, including Pecos and Reeves; legacy fields statewide.
EVIDENCE READ The widest mix of old vertical wells, marginal producers, and modern horizontals. Heavy-tail methane evidence is strong, but West Texas pressure, water, and subsurface migration risks require a separate engineering screen.	LEAD REGULATOR Railroad Commission of Texas; TCEQ for the marginal-well methane program.

TARGETING
IMPLICATION

Largest scale opportunity - and the most complex rights, water, and well-integrity environment.

Targeting sequence: confirm records and rights - screen emissions - attribute the source - characterize persistence and uncertainty - determine engineering feasibility - admit only eligible wells.

Pennsylvania

INVENTORY SIGNAL 19,160 documented orphan wells in the USGS baseline; the broader legacy inventory is estimated in the hundreds of thousands.	PRIMARY GEOGRAPHY Northwest and western counties, led by Venango, McKean, Warren, and Forest.
EVIDENCE READ The strongest abandoned-well methane and co-pollutant evidence base. The target cohort is overwhelmingly old, shallow, conventional vertical wells.	LEAD REGULATOR Pennsylvania Department of Environmental Protection.

TARGETING
IMPLICATION

Dense legacy corridors, mature public data, and a strong case for measurement-led prioritization.

Targeting sequence: confirm records and rights - screen emissions - attribute the source - characterize persistence and uncertainty - determine engineering feasibility - admit only eligible wells.

West Virginia

INVENTORY SIGNAL 3,594 wells in the USGS baseline; later public inventories exceed 5,600.	PRIMARY GEOGRAPHY Ritchie, Pleasants, Gilmer, Roane, Calhoun, Doddridge, and adjacent counties.
EVIDENCE READ Direct measurements show substantial well-to-well variability. The legacy inventory is predominantly old Appalachian vertical wells, with modern horizontals separately identifiable.	LEAD REGULATOR West Virginia DEP Office of Oil and Gas.

TARGETING
IMPLICATION

A compact Appalachian corridor with accessible production files and a strong state/federal plugging pipeline.

Targeting sequence: confirm records and rights - screen emissions - attribute the source - characterize persistence and uncertainty - determine engineering feasibility - admit only eligible wells.

Oklahoma

INVENTORY SIGNAL 20,406 known abandoned wells requiring plugging or adoption across 76 counties.	PRIMARY GEOGRAPHY Cherokee Platform and northeast/east counties, including Okmulgee, Washington, Nowata, Creek, and Tulsa.
EVIDENCE READ Many wells predate reliable records. A 179-well field campaign found most wells did not leak detectably, while shallower and unplugged wells were more likely to emit - supporting triage, not blanket assumptions.	LEAD REGULATOR Oklahoma Corporation Commission; Osage County follows Tribal and federal jurisdiction.

TARGETING
IMPLICATION

Large, locatable inventory with a regulator-defined risk ladder and a clear role for aerial, LiDAR, and direct screening.

Targeting sequence: confirm records and rights - screen emissions - attribute the source - characterize persistence and uncertainty - determine engineering feasibility - admit only eligible wells.

Utah

INVENTORY SIGNAL 72 documented orphan wells in the 2021 USGS baseline; the state maintains a current live list.	PRIMARY GEOGRAPHY Uinta Basin, Vernal area, and southeastern Utah.
EVIDENCE READ Legacy wells generally predate 1955. State records preserve depth and drilled date; regional methane studies support basin-scale screening rather than statewide averages.	LEAD REGULATOR Utah Division of Oil, Gas and Mining.

**TARGETING
IMPLICATION**

A concentrated basin opportunity with an unusually explicit annual risk-assessment process.

Targeting sequence: confirm records and rights - screen emissions - attribute the source - characterize persistence and uncertainty - determine engineering feasibility - admit only eligible wells.

Wyoming

INVENTORY SIGNAL 1,323 documented orphan wells in the USGS baseline.	PRIMARY GEOGRAPHY Powder River Basin.
EVIDENCE READ The cohort includes many shallow vertical coalbed-methane wells. A small pilot found generally modest but variable emissions, underscoring the need for basin-specific measurement.	LEAD REGULATOR Wyoming Oil and Gas Conservation Commission.

TARGETING
IMPLICATION

Strong geographic clustering and public well data, with groundwater and produced-water concerns alongside methane.

Targeting sequence: confirm records and rights - screen emissions - attribute the source - characterize persistence and uncertainty - determine engineering feasibility - admit only eligible wells.

Montana

INVENTORY SIGNAL 221 documented orphan wells in the USGS baseline.	PRIMARY GEOGRAPHY Kevin-Sunburst Dome in Toole County and other eastern fields.
EVIDENCE READ USGS monitoring showed emissions change with wind and daily temperature. Short spot measurements can therefore misclassify persistence and magnitude.	LEAD REGULATOR Montana Board of Oil and Gas Conservation.

TARGETING IMPLICATION

Excellent public data and a focused research geography; Tribal pathways require government-to-government or Tribe-authorized partnership.

Targeting sequence: confirm records and rights - screen emissions - attribute the source - characterize persistence and uncertainty - determine engineering feasibility - admit only eligible wells.

Alabama

INVENTORY SIGNAL 25 known orphan wells in the 2025 state story map; 16 are in Lamar County.	PRIMARY GEOGRAPHY Lamar County, the Black Warrior Basin, and southwest Alabama.
EVIDENCE READ The known set is small and the Black Warrior coalbed-methane inventory is predominantly vertical. No robust state-specific orphan-well methane campaign was identified.	LEAD REGULATOR State Oil and Gas Board of Alabama.

TARGETING
IMPLICATION

A bounded pilot geography where aerial or mobile screening should precede broader rights work.

Targeting sequence: confirm records and rights - screen emissions - attribute the source - characterize persistence and uncertainty - determine engineering feasibility - admit only eligible wells.

Nevada

INVENTORY SIGNAL 63 presumed abandoned wells in the 2020 USGS state file.	PRIMARY GEOGRAPHY Small, dispersed inventory; activity around Kingston and Gabbs Valley.
EVIDENCE READ No consolidated current orphan count or state-specific methane campaign was located. Geometry must be reconstructed from individual permit and completion records.	LEAD REGULATOR Nevada Division of Minerals.

TARGETING
IMPLICATION

A reconnaissance market, not a first-wave scale market.

Targeting sequence: confirm records and rights - screen emissions - attribute the source - characterize persistence and uncertainty - determine engineering feasibility - admit only eligible wells.