

Helium Exploration at Red Gap Ranch

February 12, 2019





Presenters



- Barbara Goodrich, City Manager
- Charity Lee, Real Estate Manager
- Anja Wendel, Senior Assistant City Attorney
- Brad Hill, Water Services Director



Tonight's agenda

- Why?
- What due diligence did the City undertake?
- Why approve a license agreement?
- Why sign a memorandum of understanding?
- What is seismic testing?
- What if there is marketable helium?
- Council direction



Why?



- Opportunity to be involved in activity already happening around Red Gap
 - Strategic opportunity to be engaged and involved
- Legally obligated to provide access
- License provides protection to the City
- City Water Services will receive seismic/geologic data
- Seismic testing is the only allowed activity
- First step of a very long educational process, if any interest
- Economic development of Red Gap Ranch



Why?



How did City become involved?

- Desert Mountain Energy (DME) asked City for access across Red Gap to reach State lands
 - Canadian company, with experience
- State has entered into 19 leases with DME for helium exploration and drilling on State lands (over 40,000 acres)



Why?



Considerations

- City Council has asked, how can we use Red Gap?
 - Water, sheep grazing, solar, agriculture? What else?
- Helium is a rare and valuable resource
 - Used for hard drives, barcode readers, computer chips, semiconductors, LCD panels and fiber optic cable
 - A coolant for MRIs, satellite instruments, critical to space industry
- DME offered to share seismic testing information



Due Diligence

What due diligence did City undertake?

- Met with DME to understand its proposal
- Contacted State Land Department for information
- Reviewed with Water Services, Property & Development Committee, City Manager
 - Direction to take baby steps
- Reviewed access/seismic routes with cultural resources consultant, historic preservation officer, and state
 - No concerns



License across Red Gap

Legal considerations for why grant access?

- Red Gap Ranch parcels & State lands are “checkerboard”
- There are many access easements across Red Gap
- A.R.S. § 12-1202 recognizes “private right of access”, also common law “implied way of necessity”
- Licensing process gives City control over access

(Executive Session necessary for further legal questions)

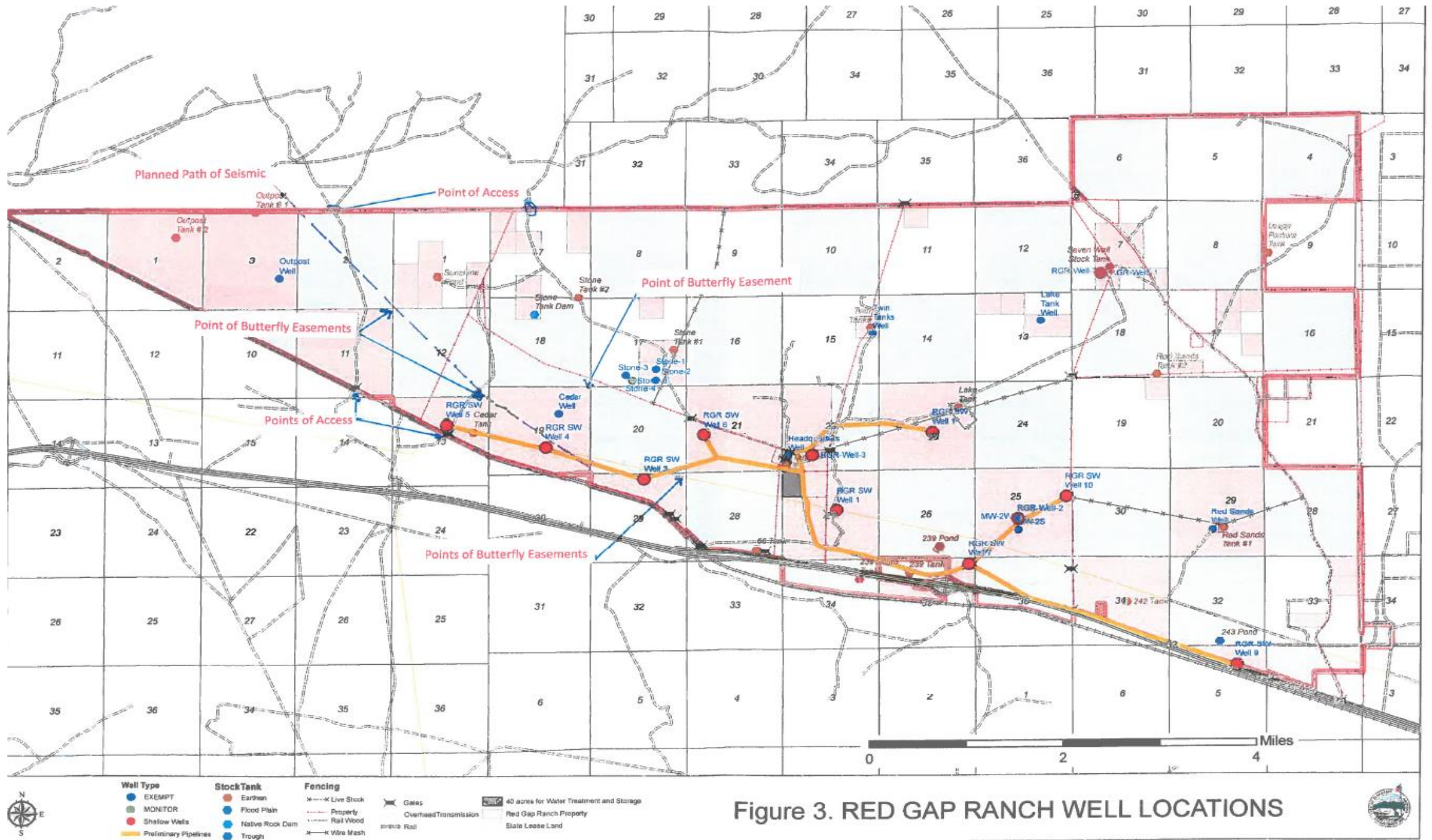


Figure 3. RED GAP RANCH WELL LOCATIONS





License across Red Gap

Legal considerations for why grant a license?

License

- Allows use of City land
- Short term
- City Manager approves
- Typically not recorded

Easement

- Grants right to use City land in perpetuity
- Long term
- Approved by Council
- Recorded



License across Red Gap

What does the license provide?

- Allows legal right of access across Red Gap Ranch
- Allows seismic testing (sound waves)
 - NO FRACKING, NO DRILLING, NO INJECTION OF FLUIDS
- Protections for City
 - One year license, with option to terminate with 6 months notice
 - Fixed routes
 - Obligation to restore property if damage caused



Memorandum of Understanding

What is its purpose?

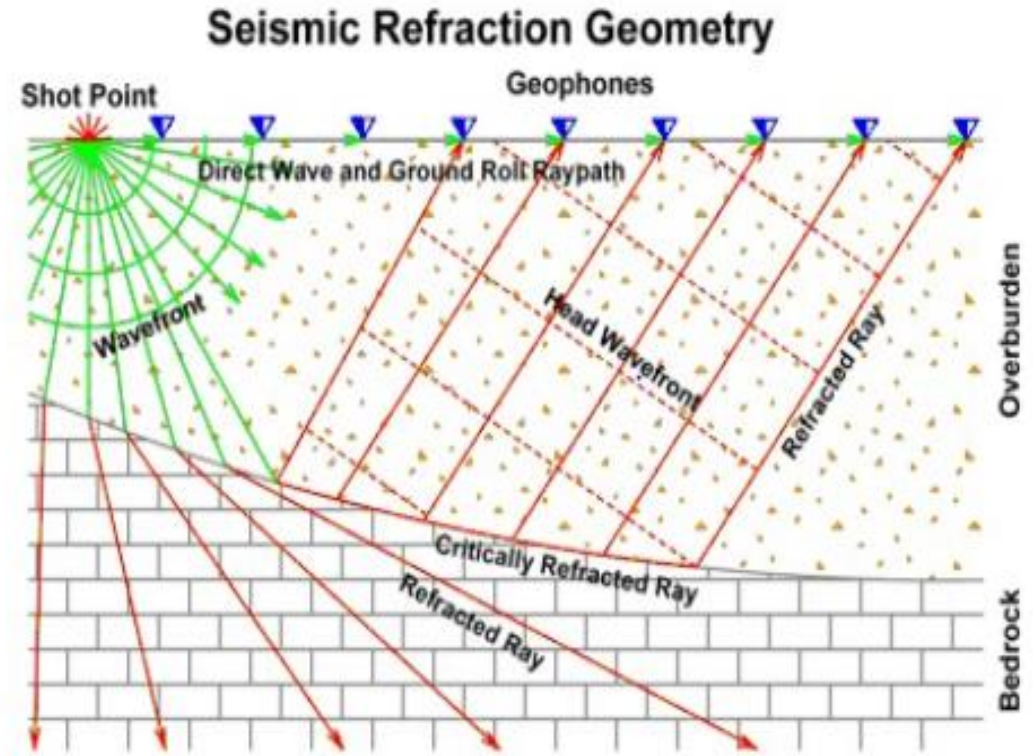
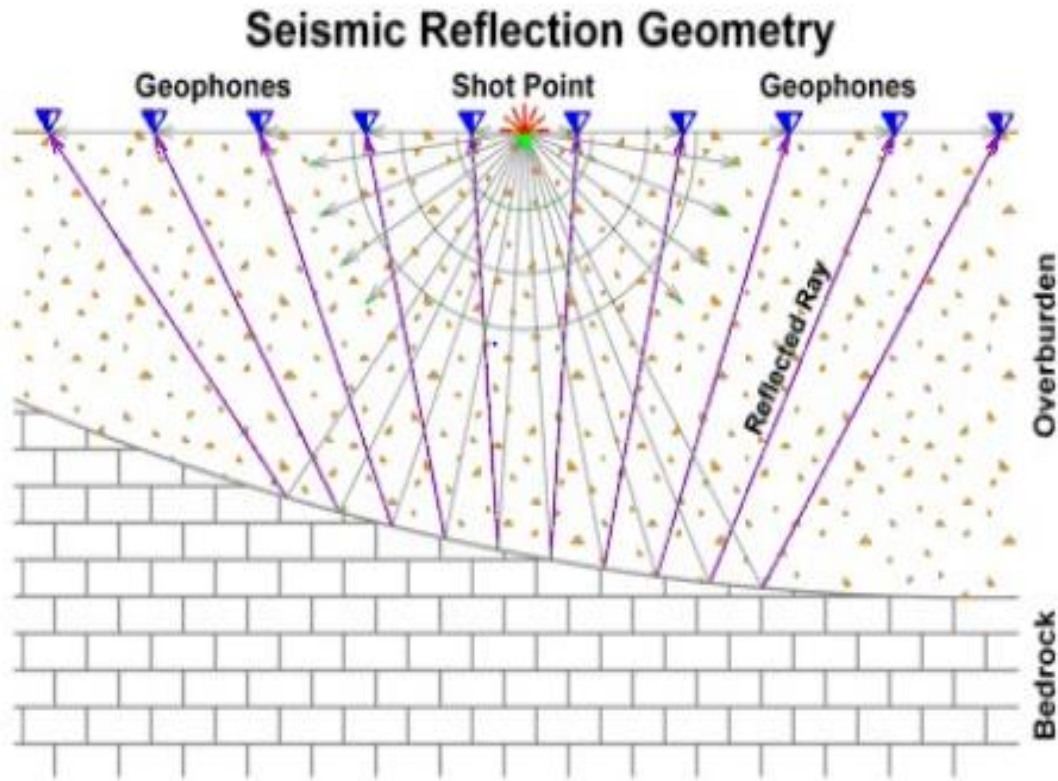
- Support economic development

Public concerns?

- Perception that City has agreed to helium drilling
 - Not true
- References hydrocarbons

Seismic Testing

What is it?





Seismic Testing

What seismic testing is proposed?

1. DME approached City to conduct seismic testing on State Lands and City lands, if interested
2. DME stated purpose is to look for buried geologic structures from ~1,400' >3,800' feet below land surface





Seismic Testing



City seismic testing activities around Flagstaff

1. City has conducted seismic testing & other geophysical techniques when looking for new water wells, a common non-invasive technique to better understand subsurface geology, hydrogeology.
2. ~30 miles of testing in Flagstaff area over past 16 years.
3. Typically, City & USGS have conducted CSAMT, Seismic Reflection & Seismic Refraction.



Seismic Testing



City would benefit from seismic testing at Red Gap

1. City has not conducted seismic testing at Red Gap Ranch.
2. Prior to purchase, land owner conducted 11.25 miles of CSAMT testing.
3. In 2009, City's hydrology consultant recommended conducting additional geophysical studies.



Seismic Testing



Ensuring cultural protections

1. Water Services conducted Cultural & Biological Survey in 2015, funded by the U.S. Bureau of Reclamation.
2. Archeology consultant recommended for DME to use existing roads and same access in & out for any limited off-road with ATV's for geophone placement.



Protecting City Water Resources

What if DME finds marketable Helium?

1. JACOBS engineering was contacted to discuss compatibility of a helium well field with a City water supply well field.

2. JACOBS raised numerous questions to obtain answers:

- a. Method on how to bring helium to market? (truck v. rail)
- b. Brackish water mixed with helium? (e.g., how to dispose?)
- c. Methane mixed with helium? (e.g., sell or flare?)

Holbrook Basin/DME: 70-80% Nitrogen, 8-10% Helium, 2% Methane, 18% CO₂, Xenon, etc

- d. Will City have rights to review any plan to bring helium to market?
- e. Do they plan to frack?



Protecting City Water Resources

What if DME finds marketable Helium?

1. Water Services OK with seismic testing only (not drilling, too many unknowns)...*recommended to take one step at a time*. Useful for future water resources investigations.
2. If DME develops a helium wellfield on ASLD lands, it may be beneficial for the City to have an agreement with DME (License, Lease, MOU or otherwise) that outlines our expectations or requirements to cross City property.
 - State would regulate helium drilling
3. HB2498 (Representatives Tsosie-D & Blackman-R); prohibition of hydraulic fracturing.



Council Direction

License across Red Gap

Council options:

1. Leave the License “as is”
2. Terminate with 6 months notice
3. Immediately terminate
(Not recommended, breach)
4. Amend to prohibit seismic testing
(Not recommended, because data is valuable)



Council Direction

Memorandum of Understanding

Council options:

1. Terminate with 10 days notice
(May negatively affect City economic development opportunities, more information needed)
2. Amend MOU to address public concerns
(Recommended)