

Hydraulic Fracturing

Loveland City Council
June 12, 2012



OIL & GAS CONSERVATION COMMISSION

COGCC MISSION

PROMOTE THE RESPONSIBLE AND BALANCED DEVELOPMENT OF COLORADO'S OIL & GAS RESOURCES

- Ensure: Exploration and production of oil and gas resources are conducted efficiently.
- Mineral owners' rights are protected.
- Oil and gas production is conducted in a manner consistent with **protection of public health, safety, and welfare, including the environment & wildlife resources.**



OIL & GAS CONSERVATION COMMISSION

REGULATIONS

- 100 Definitions
- 200 General
- 300 Drilling, Development, Procedure, and Abandonment
- 400 Units, Enhanced Recovery, and Storage
- 500 Hearings
- 600 Safety
- 700 Financial Assurance
- 800 Aesthetic and Noise
- 900 Waste Management
- 1000 Reclamation
- 1100 Pipelines
- 1200 Wildlife



EXPERIENCE AND EXPERTISE

COGCC staff members have an average of 20 years of experience working with oil and gas development



COGCC is a science-driven organization, with investigations conducted by highly trained, experienced and educated personnel.

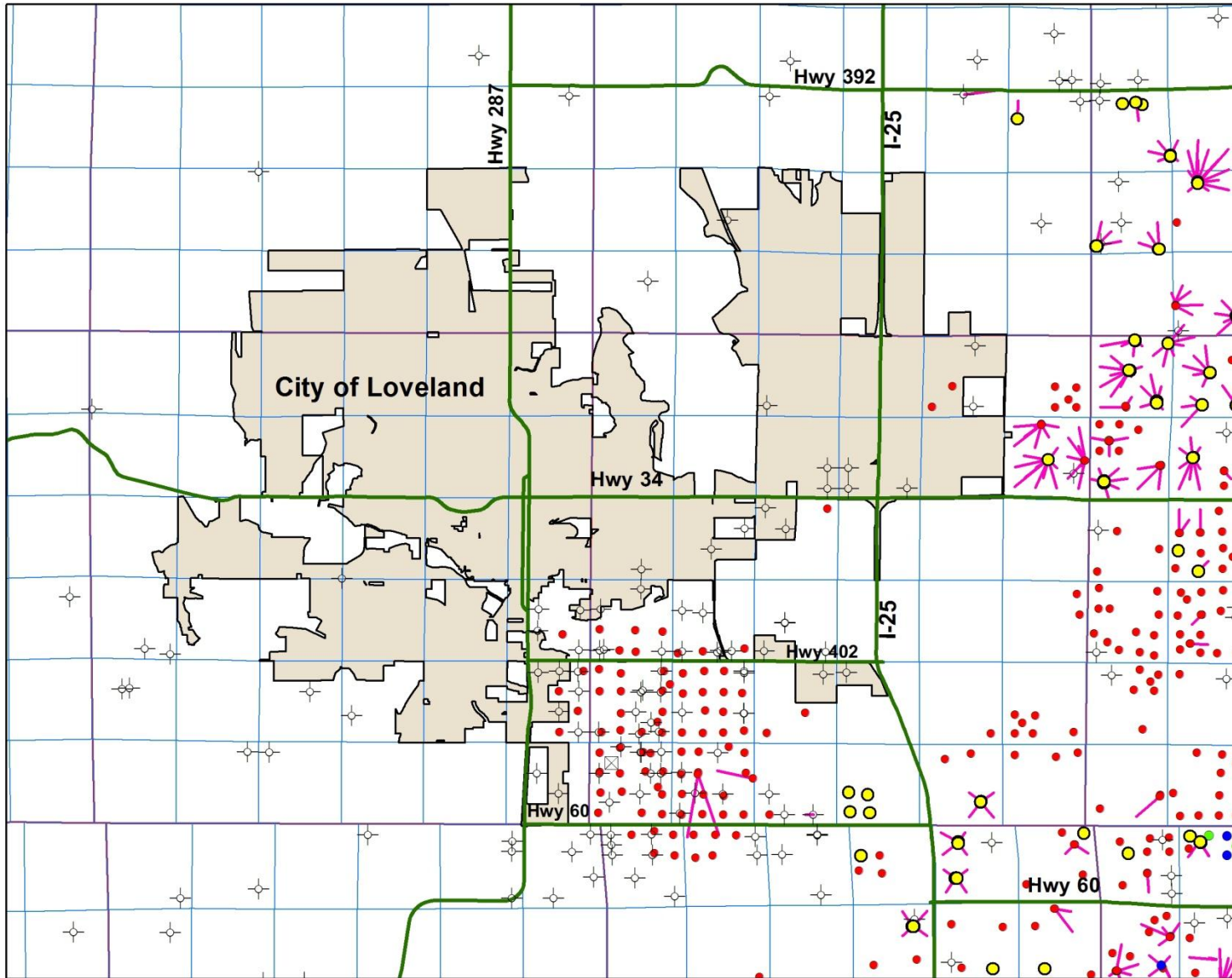
Half of COGCC employees have graduate degrees in areas of scientific expertise including geochemistry, hydrology and geology.



Staff includes 36 specialists involved in inspecting oil and gas sites and enforcement of regulations. The environmental unit alone includes 18 specialists.



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Legend

Wells

- Active Permits
- Producing Well
- Drilling Well
- Waiting on Completion
- Directional Wellbore
- ⊕ Plugged Well
- ⊕ Domestic Well

0 1 2 4 Miles

Loveland Area Wells



Oil and Gas Development

Concept

Mineral Leasing

Exploration

Seismic

Test Wells

Development

Production Infrastructure

Density and Drainage



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PERMITTING PROCESS

APPLICATION FOR PERMIT TO DRILL

- APD
- FORM 2
- Provides information regarding the permitting of the wellbore and its construction.
 - Surface & bottom hole location
 - Casing
 - Cementing

OIL AND GAS LOCATION ASSESSMENT

- OGLA
- FORM 2A
- Provides an assessment of surface location.
 - Area of disturbance
 - Environmental review
 - Hydrology
 - Groundwater
 - Surface water
 - Inter-agency consultation



DRILLING PERMITS are reviewed for:

Type of Permit

Location (surface & bottom hole)

Surface Ownership Agreement

Mineral Ownership

Building Setbacks

Lease /Unit Boundary Setbacks

Financial Assurance

Deviated Hole

Drilling/Spacing Unit

Casing Plan

Cementing Plan

Mud/Waste Disposal

Special Drilling Conditions

Safety Setbacks



OIL & GAS LOCATION ASSESSMENTS are reviewed for:

Location, surface disturbance

Environmental concerns

Hydrologic setting (groundwater,
surface water)

Topographic setting

Wildlife protection

Land use

Equipment

Mud/Waste disposal

Safety setbacks



SAFETY RULES

“...to protect the health, safety and welfare of the general public during the drilling, completion and operation of oil and gas wells and producing facilities...”

- Statewide rules
- High density rules
- Blowout preventer equipment (BOPE) Rule 604 – Oil & Gas Facilities Production Facilities
(tanks, production equipment, pits, special equipment)
- Fire Prevention & Protection
- Air and Gas Drilling
- Hydrogen Sulfide
- Coal-bed Methane Wells



APPLICATION - SUBMITTED

- Upon completeness determination:
 - Application is posted to the Internet
 - Operator is notified application process is started
 - LGD, CPW and CDPHE are notified of application



DRILLING PERMIT NOTIFICATIONS

Upon submittal of an application, oil and gas operators are required to:

- Mail or deliver a notice to the surface owner of the proposed oil & gas location
- Mail or deliver a notice to all landowners within 500' of the proposed oil & gas location*
- Mail or deliver a notice to LGD.

*except in the areas subject to the 318A and 318B well location rules



COMMENT PERIOD

Comment period – Rule 305.c.

- 20 day public and LGD comment period for all APDs and OGLAs
- LGD may extend comment period by 10 days
- LGD may request CDPHE consultation
- CPW and CDPHE 40 day comment period
- COGCC accepts and review all comments



CONSULTATION

Permit to Drill

- Surface Owner-including final reclamation consultation
- Local Governmental Designee (LGD)

Oil and Gas Location Assessment

- Surface Owner
- Local Governmental Designee (LGD)
- Colorado Department of Public Health & Environment
- Colorado Parks and Wildlife



COGCC FINAL REVIEW

- All Comments are reviewed
- Evaluate additional protection recommendations
 - Operator Best Management Practices (BMP)
 - Conditions of Approval (COA)

Examples:

- Lined drilling pits, pit restrictions, or closed-loop (pit-less) drilling systems ;
- Additional high density operational requirements;
- Site specific Best Management Practices (BMPs), including wildlife BMPs and spill control BMPs;
- Water well sampling, including baseline.



COGCC Hydraulic Fracturing Rules

- Rule 205A - Hydraulic Fracturing Chemical Disclosure
 - 48 hour advance notice of treatment
 - Disclosure of chemicals used in fracture treatment.
- Rule 317 - General Drilling Rules
 - Well casing and cementing requirement
 - Cement bond logs
 - Pressure test casing before treatment
- Rule 341 – Bradenhead Monitoring During Well Stimulation Operations
 - Monitor well pressures during stimulation
- Rules 903 & 904
 - pit permitting, lining, monitoring, & secondary containment



Braden Head

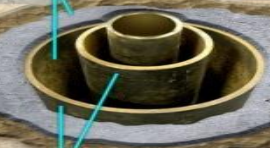


Niobrara Oil Well

Water Well

Cement Casing

sand
shale
sand
coal
sand



Steel Casing

Surface Casing

Fox Hills Aquifer, 450-700'

Wells Fargo Center
Denver, CO: ~700'

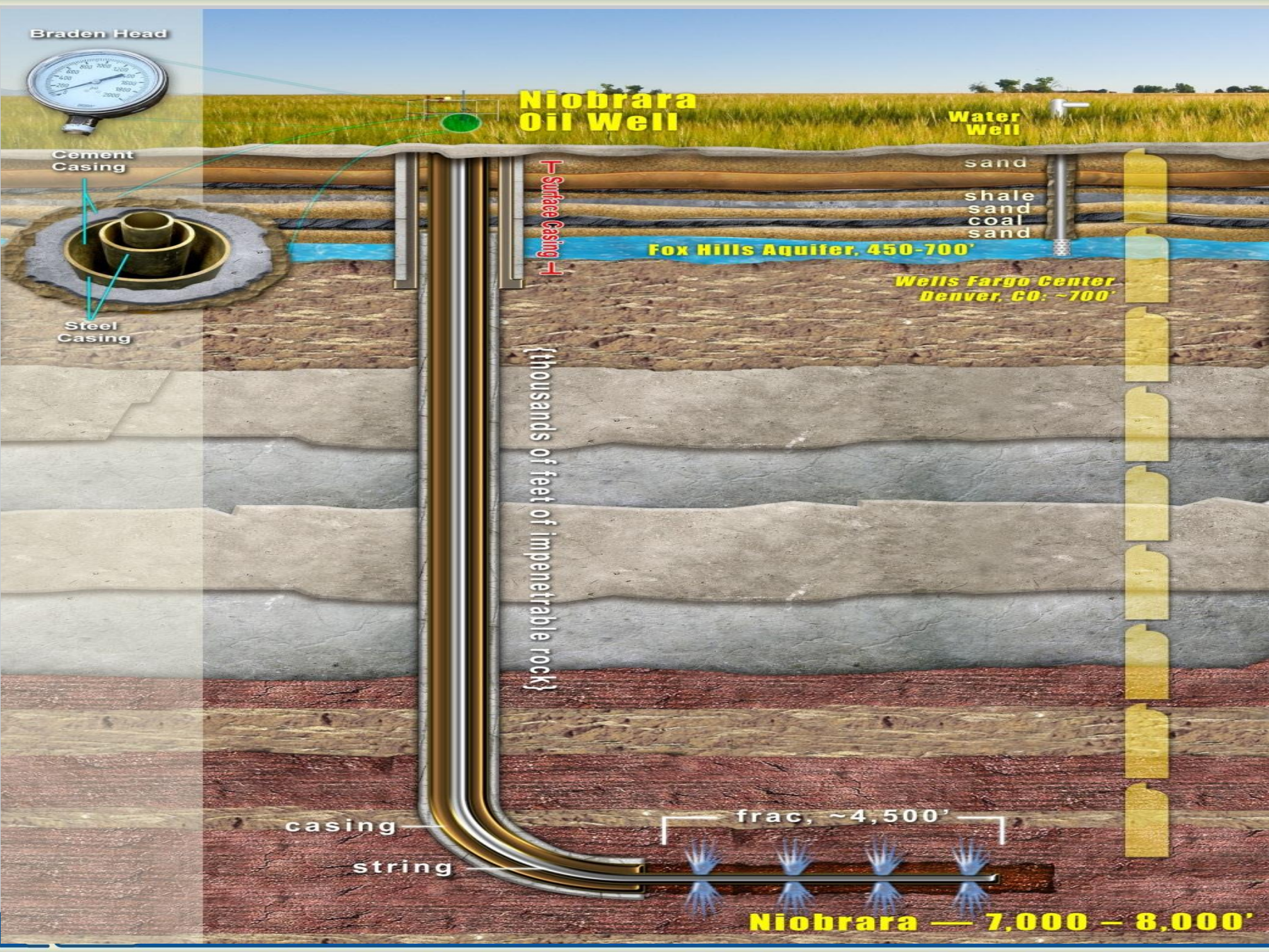
{thousands of feet of impenetrable rock}

casing

string

frac, ~4,500'

Niobrara — 7,000 — 8,000'



FRAC JOB – WELL SITE

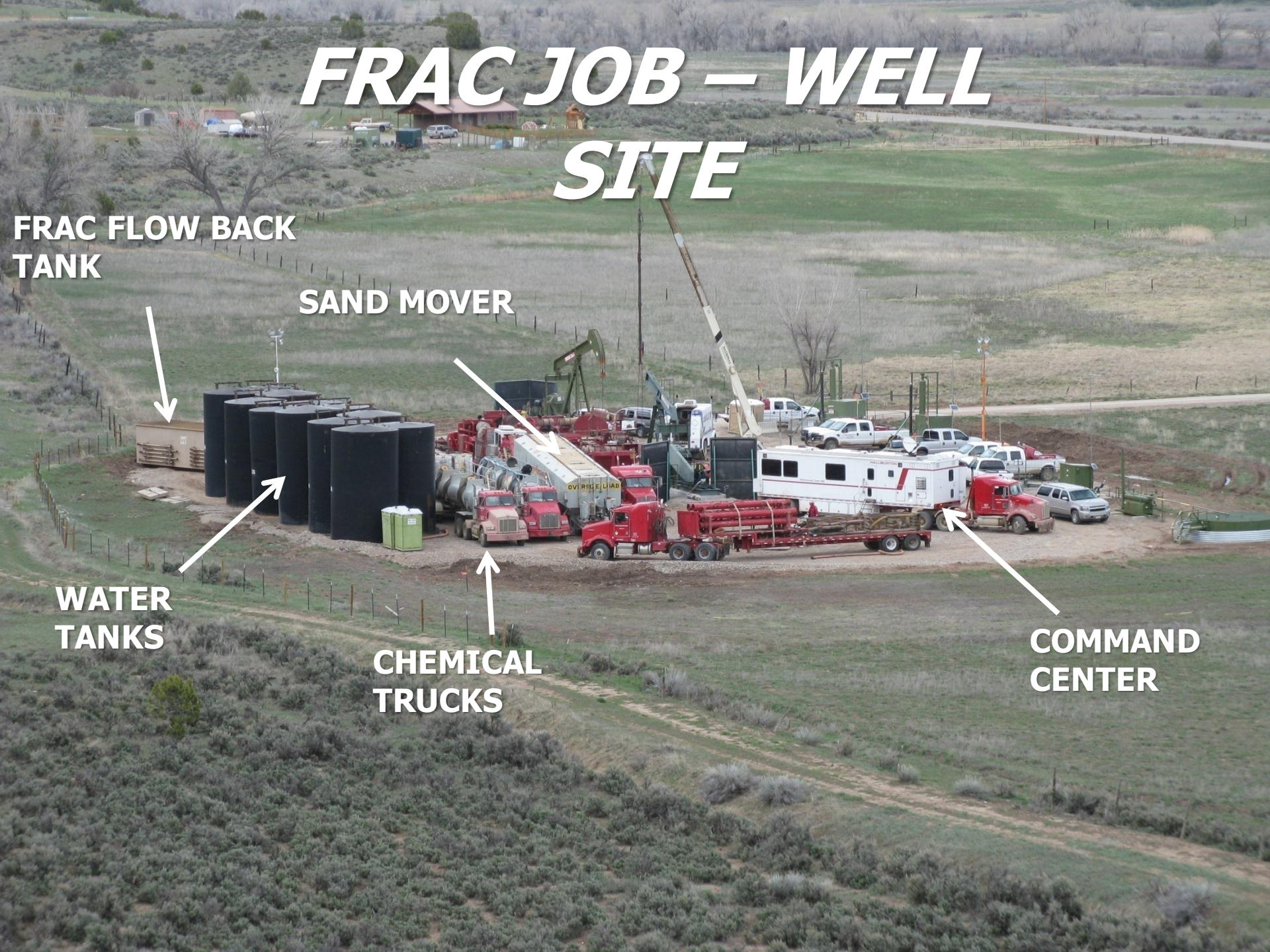
**FRAC FLOW BACK
TANK**

SAND MOVER

**WATER
TANKS**

**CHEMICAL
TRUCKS**

**COMMAND
CENTER**



RECLAMATION

- New drilling site construction must include steps for soil conservation and stormwater controls.
- Interim reclamation occurs after drilling and completion and requires the site be partially restored and footprint reduced.
- Final reclamation requires removal of all equipment, restoration and re-vegetation.



<http://cogcc.state.co.us/>

Colorado Oil and Gas Conservation Commission Home Page - Windows Internet Explorer

http://cogcc.state.co.us/

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HOME

Colorado Oil and Gas Conservation Commission

A division of the Colorado Department of Natural Resources Transparency Online Project (TOP)

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January 17, 2011

PUBLIC ANNOUNCEMENTS

[Final Amended Rules](#)
Training, questions, answers and other materials on the new rules.


[Antero Spacing Application Documents *New*](#)
Materials submitted in relation to spacing application for Silt Mesa and Peach Valley. (14.9 MB 63 zipped files)

[Gasland Correction Document \(10/29/2010\)](#)
Because an informed public debate requires accurate information, the COGCC has corrected several errors in Gasland's portrayal of Colorado incidents.

[EPA Response to CPA Pit Liners \(09/15/2010\)](#)
Click link above for letter.

[CPA Pit Liner Brief \(09/14/2010\)](#)
CPA brief in support of position that pit liner disposal falls within the jurisdiction of the COGCC.

QUESTIONS?



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