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# Moving Beyond Misinformation: Education and Engagement

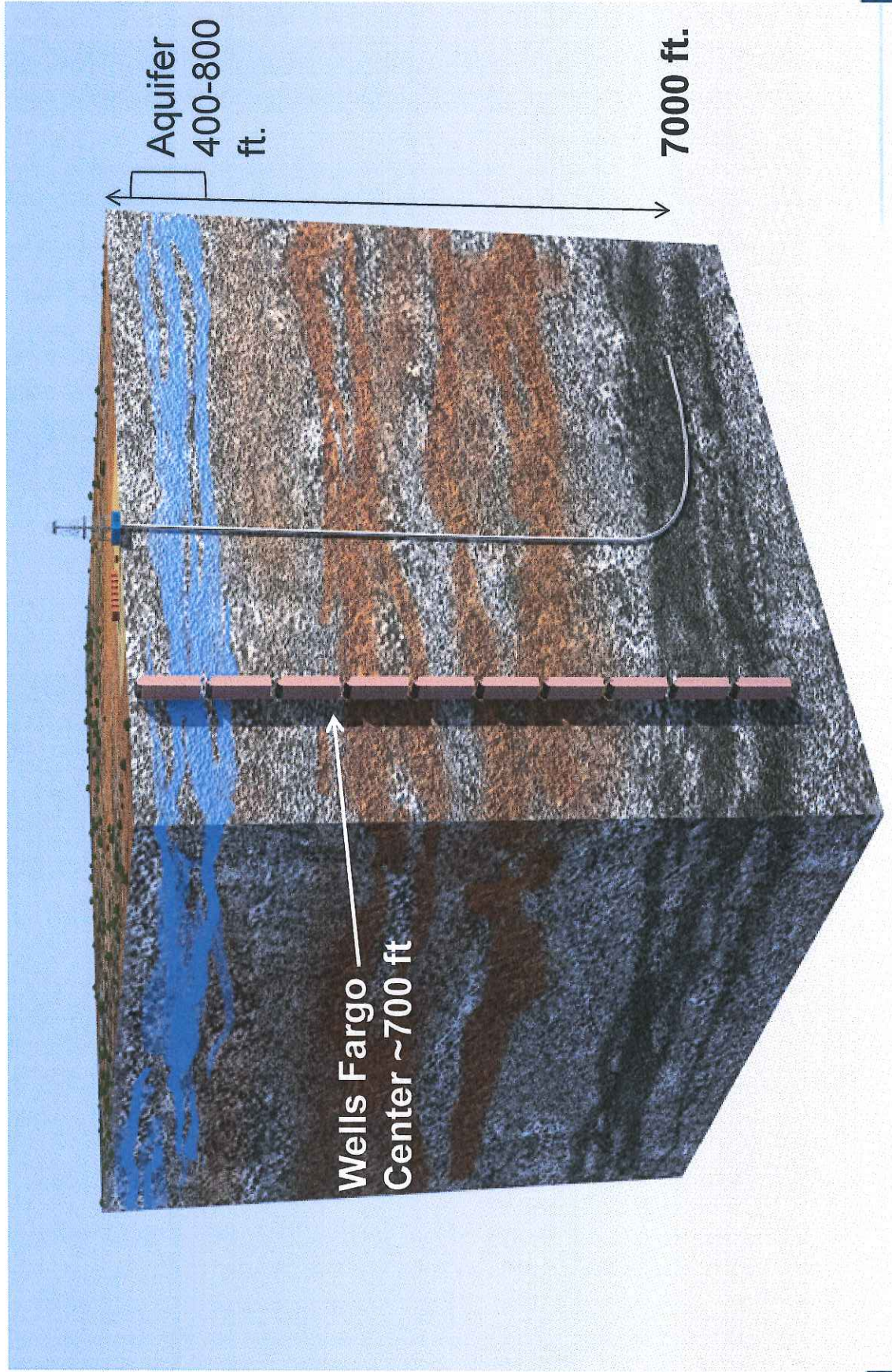


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# Misperception: Hydraulic Fracturing is Injecting Fluids into Groundwater

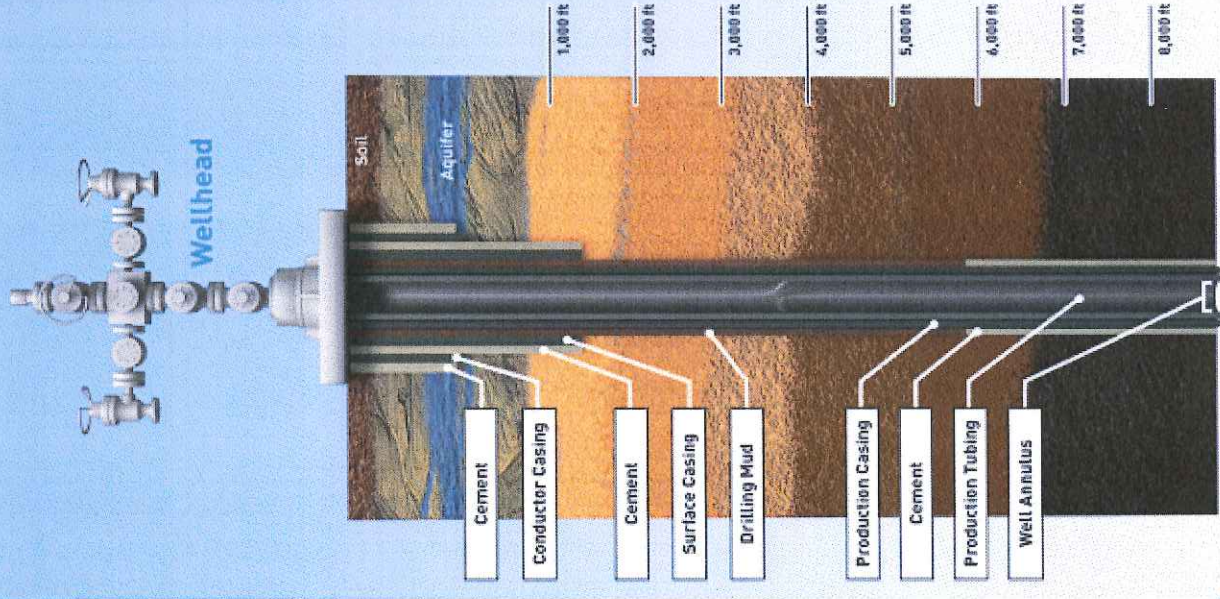


# ▶▶▶ Drilling Distance



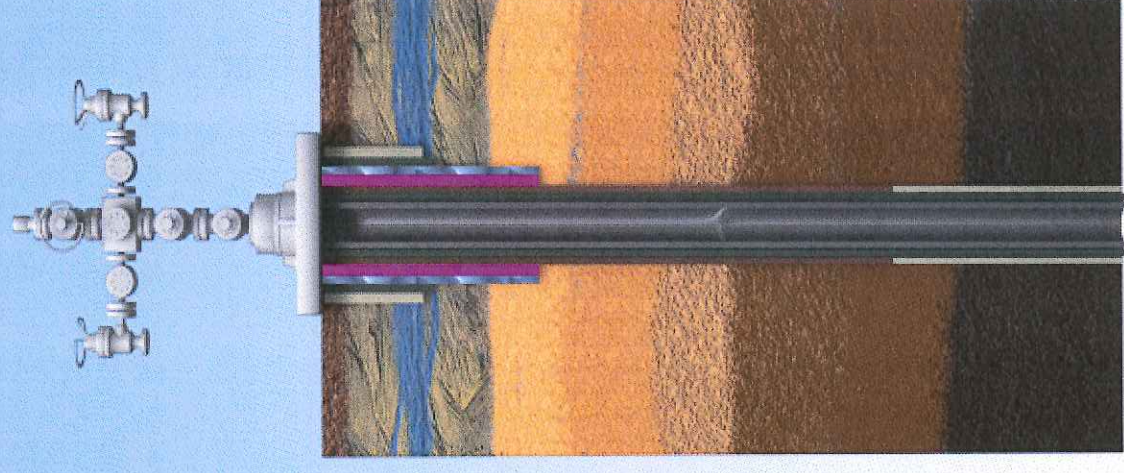
## ▶▶▶ Casing

- Multiple layers surrounding the aquifer
- Cement
- Conductor Casing
- Cement
- Surface Casing
- Drilling Mud
- Production Casing
- Cement
- Production Tubing
- Well Annulus



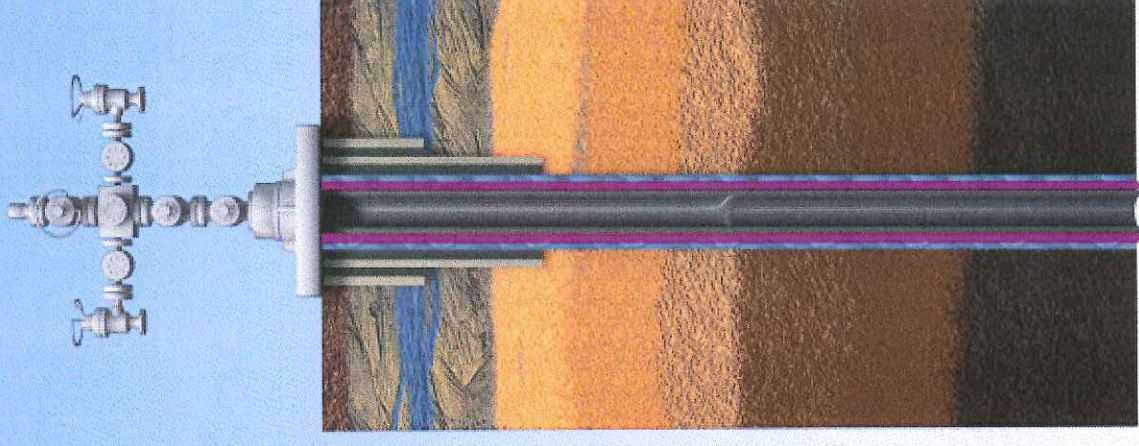
## ▶▶ Surface Casing

- **Purpose**
  - Protect ground water
  - Provide stable wellbore during drilling operation
  - Provide well control during drilling
- **Depth Requirements**
  - Set by State and BLM regulations
  - Extends below the aquifer
- **Cement Helps**
  - Protect casing from corrosion
  - Provide zonal isolation
  - Support casing in wellbore



# ▶▶ Production Casing

- **Purpose**
  - Provide zonal isolation
  - Provide well control
  - Well path to productive intervals
- **Cement Requirements**
  - Set by State regulations
  - Set by BLM regulations
  - Operator requirements
- **Cement Helps**
  - Protect casing from corrosion
  - Support casing in wellbore





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# Misperception: Drilling and Hydraulic Fracturing Uses Too Much Water



## ▶▶ Colorado Water Use

Sector	2010 Use (Acre-Feet/Yr) <sup>4</sup>	Percent of State Total
<b>Total</b>	<b>16,359,700</b>	
Agriculture	13,981,100	85.5%
Municipal and Industrial	1,218,600	7.4%
Total All Others	1,160,000	7.1%
<b>Breakdown of "All Others"</b>		
<b>Total All Others</b>	<b>1,160,000</b>	
Recreation	923,100	5.64%
Large Industry	136,000	0.83%
Thermoelectric Power Generation	76,600	0.47%
<b>Hydraulic Fracturing</b>	<b>13,900</b>	<b>0.08%</b>
Snowmaking	5,300	0.03%
Coal, Natural Gas, Uranium, and Solar Development	5,100	0.03%
Oil Shale Development	0	0.00%



## ▶▶ Estimated Water Use

Projection of Annual Demand for Hydraulic Fracturing (Acre-Feet <sup>2</sup> ) <sup>3</sup>					
2010	2011	2012	2013	2014	2015
13,900	14,900	16,100	16,900	17,800	18,700

- 2015: 0.10% of total water use

One Acre Foot is Approximately 326,000 Gallons

Source: COGCC



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## ▶▶ Burning NG Creates Water

- In addressing the lifecycle disposal of water, burning NG creates it



- A gas well that produces 1 Billion Cubic Feet actually contributes back 11 million gallons of water back to the hydrologic cycle



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## ▶▶ Baseline Water Sampling

- Pre and Post-drilling water samples taken around new well starts
- Increased transparency & accountability for industry

