

# Industry Water Use

## MythBusters: Industry Water Use

Water used for oil and gas operations falls under the jurisdiction of multiple regulations that dictate its acquisition and use. Below are some of the more common myths surrounding water use in oil and gas development, and explanations as to how they are misinformed—and sometimes flat out wrong.

### Myth 1: Hydraulic fracturing will dry up rivers and lakes.

In 2010, water use in Colorado for hydraulic fracturing totaled 0.08% of the entire state's water usage.

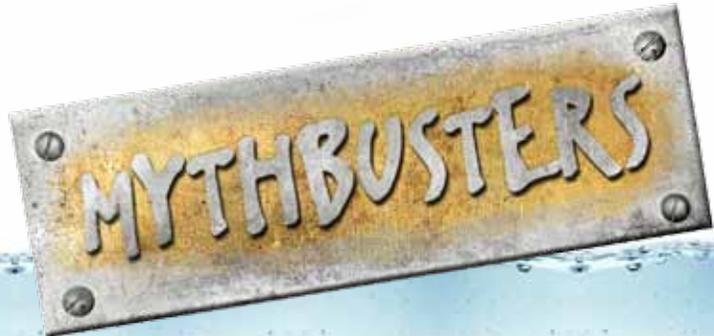
Laws governing how water is appropriated or (or distributed) in Colorado are among the most comprehensive and robust in the nation. Oil and gas operations must obtain water from the [following sources](#):

- Municipal leases or purchases for industrial use
- Changed water rights (for example agricultural to industrial)
- Fully consumed water or effluent that is purchased
- Produced water
- Non-tributary with a landowner & operator agreement
- Recycled produced water

While diversions of surface water flowing in streams and rivers are a legal option for operators, it is only allowed during periods with higher flow and lesser demand. All existing, vested water rights on those rivers must be satisfied before an operator can even consider it for use. By and large, river diversions are not a commonly relied upon source of water for the industry. Additionally, water obtained from rivers and streams will must be augmented (or replaced) by the operator.

### Myth 2: Oil and gas water use will deprive Colorado residents of water resources and stifle residential growth.

Even though oil and gas water use in Colorado is projected to be anywhere between [0.08% to 0.13%](#) of Colorado's total water use, critics have claimed water use must be compared to municipal use since oil and gas use is in direct competition with municipal and residential needs. This assumption is false due to a lack of understanding of water rights.



# Industry Water Use

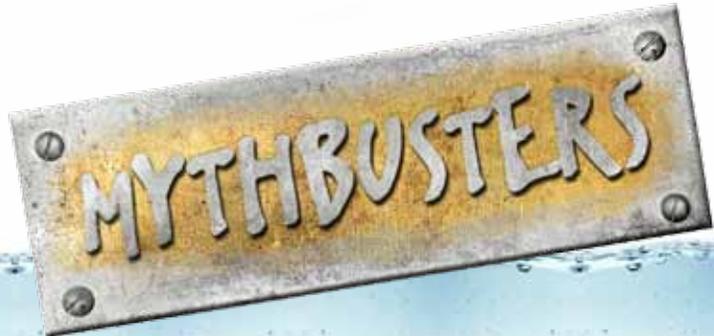
Water districts that serve municipal supplies are regulated under Colorado Constitutional code that dictates the priority of use. Residential and domestic growth purposes have the highest priority. According to Article XVI § 6 of the constitutional code:

“...when waters of any natural stream are not sufficient for the service of all those desiring the use of the same, those using the water for domestic purposes shall have the preference over those claiming for any other purpose, and those using the water for agricultural purposes shall have preference over those using the same for manufacturing purposes.”

Oil and gas falls under the “manufacturing” purposes code, and takes a junior right to residential, domestic growth, and agricultural needs. In fact, water suppliers can lease excess water to oil and gas operators.

- “Suppliers draw about 2 million gallons monthly, a tiny fraction of what other municipalities in the region provide.” ... “They [oil and gas] pay at the rate of \$1 for 300 gallons, more than twice what Loveland homeowners pay for their usage. And, the industry’s purchases from Loveland make scarcely a dent in the city’s supply.”
  - “Sales of Loveland water increasing for Front Range hydraulic fracturing use.” Reporter Herald, 2/25/2012
- “‘The city has virtually no use for the water that Anadarko wants because it doesn’t have the capacity to store it, and there is no need for it,’ Baker said” ... “‘We have enough water to meet our city’s needs.’ ”
  - “Aurora may sell \$9.5 million in water to oil and gas company for drilling across Colorado” Aurora Sentinel 6/26/2012
- “In 2010, the city [Greeley] sold 860 acre-feet of water, equal to 280 million gallons. Last year, the number climbed to 1,500 acre-feet, or just under half a billion gallons. By comparison, the city used 22,000 acre-feet last year and rented another 26 acre-feet to farmers. “ ‘We spilled 28,000 acre-feet,’ Monson said, referring to the city’s water that went downstream in the wet year, for lack of users or ways to store it.”
  - Greeley’s water’s use for oil and gas was 2% in 2011, where as Greeley spilled or released 36%.
  - “Sales of Loveland water increasing for Front Range hydraulic fracturing use” Reporter Herald, 2/25/2012

When municipalities sell excess water to oil and gas users, they are able to reduce the water costs for residents.



# Industry Water Use

### Myth 3: Oil and gas wastewater is of such poor quality it cannot be returned to streams.

In Colorado and the Rockies, most [coalbed methane production](#) produces more water than natural gas. In the Raton basin, much of this water is surface discharged according to state regulations that establish discharge water quality standards. This water provides benefits to nearby ranchers and wildlife. In fact, the largest coal bed methane producers in Colorado have teamed with environmental consulting firms to form multiple resources around this, including [real-time monitoring](#) of watersheds.

### Myth 4: Water cannot be recycled in the oil and gas industry.

It is common practice for producers in Colorado to reuse all of their [flowback water](#) and a good portion of their produced water for future [hydraulic fracturing](#) operations. After being sent to an oil polishing facility and run through a treatment process, water can and is being used for future operations. For example, WPX Energy in the Piceance basin reuses 99% of their produced water.

Because [produced water](#) also originates in the formation itself, it reduces the need for fresh water supplies.

### Myth 5: Water used for oil and gas drilling is 100% consumptive, removing water from the water cycle.

Colorado derives its water from a [few primary sources](#): The Pacific Ocean, the Gulf of California, and the [Gulf of Mexico](#). Evaporation from these bodies of water, combined with arctic air from the north, produces nearly all of Colorado's precipitation, which in turn rejuvenates the state's water supplies. Most of this precipitation is in the form of snow, which in turn provides most of the water supply to the state. The hydrologic cycle associated with these large bodies of water are not affected by the amount of water that is permanently used in oil and gas operations. The volumes are simply too vast.



When natural gas or any hydrocarbon is burned, water vapor is produced. On these large scales, this water production offsets the water consumed in drilling. You can view the calculation for how this process offsets the water used to extract the natural gas. For every billion cubic feet of natural gas burned, approximately 11 million gallons of water will be readmitted to the water cycle. [See the calculation here.](#)

Figure 1: Bodies of water and air streams that produce precipitation in Colorado.

