



# OGCC Information on Produced Water, Pipelines and Bonding

Joint Minerals, Business, and Economic Development Committee

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Tom Kropatsch





## Energy Related Water Issues

- Produced Water
  - Water that exists in subsurface formations and is brought to the surface during oil and gas production.
  - Most oil and gas produced water is also defined by W.S. §40-3-903 as by-product water. Defined as *water which has not been put to prior beneficial use, and which is a by-product of some nonwater-related economic activity and has been developed only as a result of such activity. By-product water includes, but is not limited to, water resulting from the operation of oil well separator systems or mining activities such as dewatering of mines.*
  - Most produced water is groundwater naturally occurring in the reservoir, but it can also include:
    - Water previously injected into the formation for secondary recovery to increase oil and gas production;
    - “flowback water” which may return to the surface following well completions/stimulations.
  - Produced water is typically either disposed as wastewater or beneficially reused in secondary recovery operations.



## Energy Related Water Issues

- **Produced Water**

- Injection into a Class II disposal well (UIC) or surface discharge through the National Pollutant Discharge Elimination System (NPDES) are common disposal options in Wyoming.
- Most common reuse option historically has been injection for increasing the production of oil and gas, such as in a secondary recovery operation (waterflood).
- Reuse for drilling and completions has been increasing in horizontal wells.
  - Larger volume of water necessary for well stimulations.
  - Reduce the cost of disposal of produced water.
  - Reduce volume of fresh water required for new wells.
- Reuse requires matching the water quantity, water quality, and water location needs of the source and the use.



## Energy Related Water Issues

- Produced Water
  - Wyoming Produced Water Quantity (Calendar Year 2023):
    - 1,629,035,196 bbls of water produced (68,419,478,232 gallons);
    - 777,090,864 bbls produced water reinjected into Class II Injection well for secondary recovery,
      - 47.7% of the total produced;
    - 241,296,010 bbls of produced water injected into Class II disposal well,
      - 14.8% of the total produced;
    - The remainder is reused within the oilfield, disposed via surface discharge, disposed through commercial oilfield waste disposal facilities, or other disposal method.



## Energy Related Water Issues

- Produced Water
  - Volume by County
    - No produced water volumes in Platte and Teton Counties

County	2023 Produced Water (BBL)
ALBANY	3,907,925
BIG HORN	170,874,554
CAMPBELL	124,190,833
CARBON	68,290,124
CONVERSE	32,448,928
CROOK	22,127,113
FREMONT	99,488,170
GOSHEN	51,570
HOT SPRINGS	198,871,809
JOHNSON	111,590,034
LARAMIE	14,822,227
LINCOLN	353,662
NATRONA	103,775,771
NIOBRARA	12,008,116
PARK	570,722,831
SHERIDAN	11,055,949
SUBLETTE	20,977,699
SWEETWATER	50,158,102
UINTA	531,501
WASHAKIE	6,358,746
WESTON	6,429,532



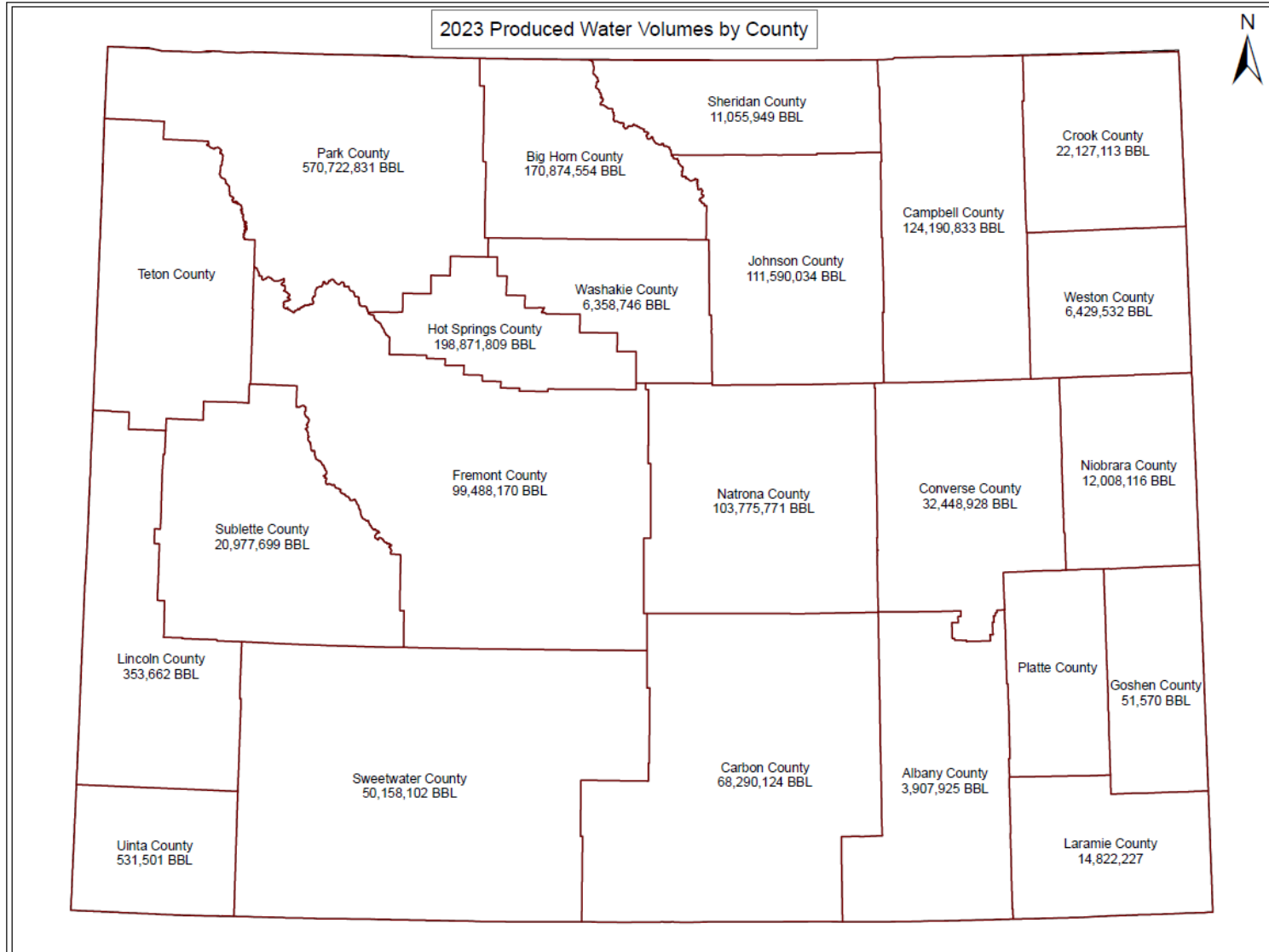
## Energy Related Water Issues

- Produced Water
  - Volume by Basin

Basin	2023 Produced Water (BBL)
POWDER RIVER BASIN	369,312,941
BIGHORN BASIN	946,667,940
WIND RIVER BASIN	150,114,893
DENVER-CHEYENNE BASIN	14,572,377
LARAMIE	4,791,266
HANNA	4,078,108
GREATER GREEN RIVER BASIN	133,739,480
OVERTHRUST BELT	2,582,723

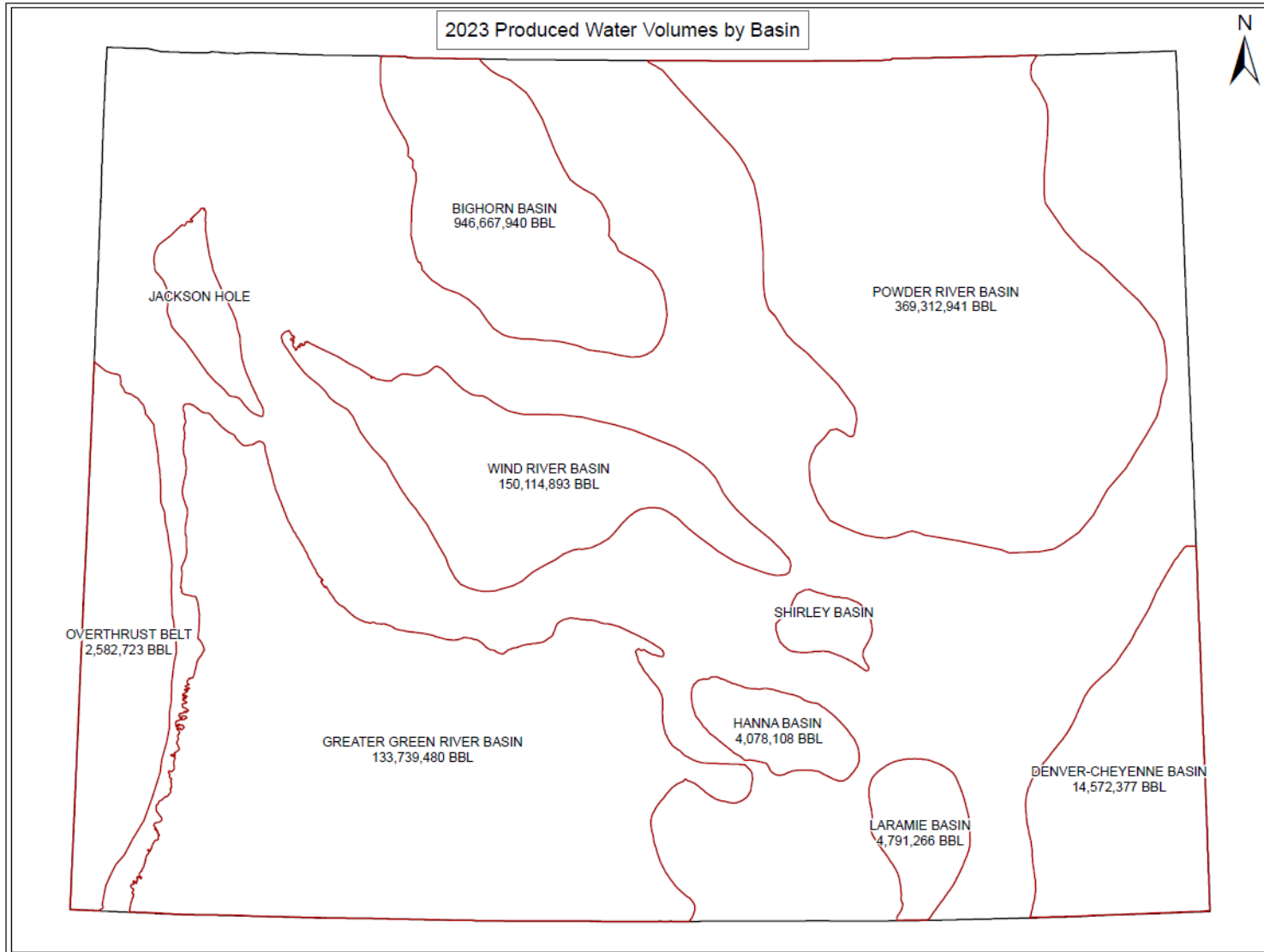


# Energy Related Water Issues





# Energy Related Water Issues





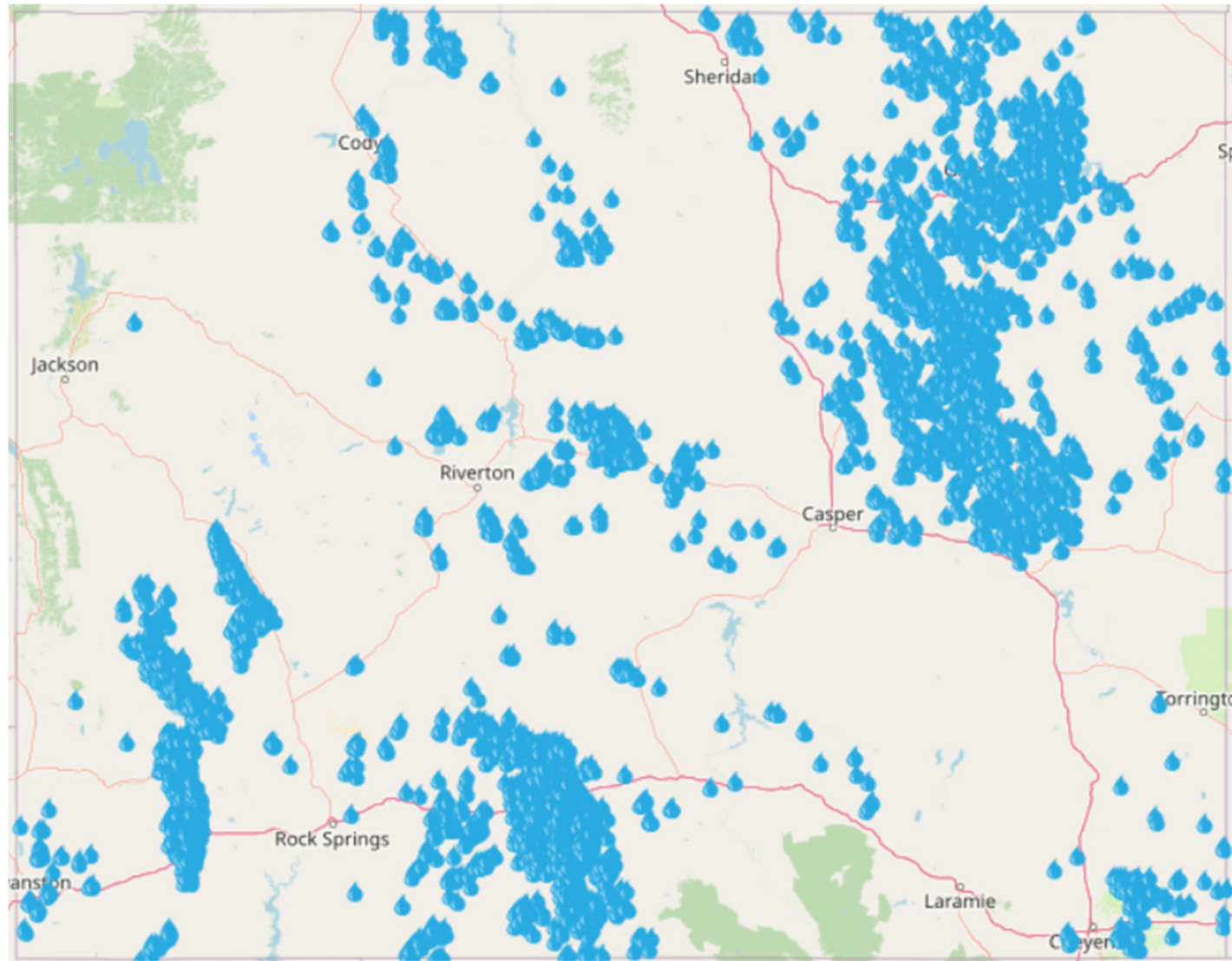


## Energy Related Water Issues

- Produced Water
  - Wyoming Produced Water Quality
    - Most produced water in Wyoming is of relatively good quality.
    - Common to have total dissolved solids (TDS) range from 5,000 ppm to 60,000 ppm.
      - Compared to TDS in the Bakken or Permian in the 100,000 – 200,000 ppm or higher range.
    - There are areas with better water quality, such as much of the produced water in the Bighorn Basin.
    - There can be areas of poor water quality, such as much of the produced water associated with the Minnelusa Formation production in the northeastern Powder River Basin.



## Energy Related Water Issues



Map illustrating produced water quality sample locations. Analytical data available on WOGCC website. Source: WOGCC Data Explorer.



## Energy Related Water Issues

- Produced Water
  - Water reuse for drilling and completions is increasingly common.
    - Reuse for drilling and completions requires:
      - Operator with enough drilling activity to utilize the water;
      - Produced water of sufficient quality;
      - Sufficient volume of produced water, when and where you need it.
  - Infrastructure can help meet these requirements.
    - Water sourced from producing wells is trucked or piped to a storage reservoir;
    - Water is aggregated and stored in reservoir to provide the required volume at the required time;
    - Water is piped or trucked to temporary storage tanks on location during completions operations;
    - If operator has excess produced water or no longer needs the water in that location it is piped or trucked to their disposal well.
    - If this infrastructure is not present in the appropriate locations operator must source fresh water nearby.



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## Energy Related Water Issues

- Produced Water
  - Operators with enough activity, a sufficient volume of produced water, and in the appropriate locations can reduce cost and reduce use of fresh water by reusing produced water.
    - Eliminate the purchase and transport of fresh water.
    - Eliminate the transport and disposal costs of produced water.
  - The WOGCC is already authorized to permit produced water storage reservoirs, but a statute change would further facilitate the reuse of produced water for these operators and would further reduce their costs.



## Energy Related Water Issues

- Produced Water
  - Existing W.S. §30-5-104(d)(vi)(A) authorizes the WOGCC to regulate *the location, construction, operation, and reclamation of all noncommercial reserve pits and produced water retention and emergency overflow pits used solely for the storage, treatment and disposal of drilling fluids, produced waters, emergency overflow wastes or other oil field wastes associated with the maintenance and operation of oil and gas exploration and production wells on a lease, unit or communitized area in such a manner as to prevent the contamination of waters of the state;*
  - Restricting the WOGCC authority to permit these reservoirs to a lease, unit or communitized area increases the number of the produced water storage reservoirs that are constructed by operators, which increases their costs, increases the disturbance, increases the risks of leaks, and increases the amount of associated infrastructure.



## Energy Related Water Issues

- Produced Water

- The WOGCC is requesting a revision to the statute that would allow permitting of centralized produced water reservoirs, which would allow industry to permit the reservoir in a location that best matches their need for produced water.
- The requested revision would strike a portion of the existing W.S. §30-5-104(d)(vi)(A), as follows:
  - regulate the location, construction, operation, and reclamation of all noncommercial reserve pits and produced water retention and emergency overflow pits used solely for the storage, treatment and disposal of drilling fluids, produced waters, emergency overflow wastes or other oil field wastes associated with the maintenance and operation of oil and gas exploration and production wells ~~on a lease, unit or communitized area~~ in such a manner as to prevent the contamination of waters of the state;



## Energy Related Water Issues

- Produced Water
  - The requested revision and centralized produced water reservoirs would not change the permitting, construction, or operational requirements of the reservoir. It would only change where the reservoir could be located, allowing operators to strategically site them where they could take most advantage of the reservoir for future operations.
  - WOGCC's requirements for permitting, construction, and operations includes pre-construction geotechnical work, depth to groundwater investigations, double-lined with leak detection reservoirs with sumps to check for leaks and/or pump out fluids from between liners, reclamation bond, etc.



# Pipelines





## Pipelines

- WOGCC Rule:
- **Chapter 4. Section 15. Production Facilities and Natural Gas Facility Equipment and Flowline Abandonment.**
- *(a) An Owner/Operator of a well or wells shall notify the Supervisor of all above and below ground flowlines and vessels, including tanks, if the flowlines or vessels are not used for a period of two (2) years. After consideration of the relevant circumstances, the Supervisor on a case-by-case basis, may require the flowline or facilities to be purged with fresh water or inert gases, drained and depressured. The Owner/Operator shall provide notification of the purging operation to the Supervisor or Authorized Agent.*
- *(b) The Supervisor may require the Owner or Operator to abandon and/or remove all above ground piping. If flowlines or facility piping are removed, the removal shall be done in a manner that prevents the escape of fluids, that is:*
  - *(i) Purge with fresh water or inert gases, drain and depressure; then,*
  - *(ii) Seal the line or cap at both ends. If not removed, the Owner or Operator will be required to mark remaining piping to identify as purged piping.*



## Pipelines

- **Chapter 4. Section 15. Production Facilities and Natural Gas Facility Equipment and Flowline Abandonment.** (continued)
- *(c) If underground flowlines or facility piping are abandoned in place, the Owner or Operator shall meet the following requirements:*
  - *(i) Purge with fresh water or inert gases, drain and depressure the flowline and piping;*
  - *(ii) Seal the line or cap at both ends; and,*
  - *(iii) Bury at least twenty-four inches (24") below the surface and restore the surface contour, unless the Supervisor or the surface land owner agrees otherwise in writing.*
- The WOGCC generally only has authority over in field gathering lines or flowlines. WOGCC authority over in field lines includes oil, gas, and water lines. It would also include lines that carry CO<sub>2</sub> or other fluids if the fluids are being injected for enhanced recovery or disposal purposes or if they are produced in association with oil and gas (H<sub>2</sub>S, helium, other gases).



## Pipelines

- WOGCC authority over the pipeline typically ends at the point of sale of the product. In certain cases the WOGCC authority may extend beyond the point of sale, e.g. WOGCC has certain authorities over gas lines that feed into Gas Processing Facilities (gas plants) as they are considered part of the gas production process.
- Certain other agencies may also have authority over these gas lines or even over in field gathering and flowlines if they meet certain conditions.



# Oil and Gas Bonding



## Oil and Gas Bonding

- WOGCC is granted authority to request bonds by W.S. §30-5-104(d)(i)(D), which states:
  - *(d) The commission has authority:*
    - *(i) to require:*
      - *(D) The furnishing of a surety bond or other guaranty, conditioned for or securing the performance of the duty to plug each dry or abandoned well or the repair of wells causing waste and compliance with the rules and orders of the commission.*
- W.S. §30-5-104(d)(v) authorizes the WOGCC to require bonding for compliance of all geophysical operations. This section also authorizes bonding for seismic operations done under the definition of oil and gas operations in W.S. §30-5-401 through 30-5-410 (Wyoming Split Estate Act) to protect and for the purpose of addressing the interests of the surface owners affected by the seismic activities.
- Wyoming Split Estate Act (W.S. §30-5-401 through 30-5-410) also authorize bonding as part of entry to the surface estate in the event an operator is unable to secure a surface access agreement or waiver from the surface owner.



## Oil and Gas Bonding

- WOGCC bonding rules are found in Chapter 3, Section 4 of the commission's rules. The WOGCC commonly requests operator blanket bonds, idle well bonds, pit/reservoir bonds, split estate bonds, seismic project bonds, and Commercial Class II Disposal Well bonds. In lieu of operator blanket and idle wells bonds, operators may also submit individual well bonds.
- The WOGCC accepts surety bonds, letters of credit, certificates of deposit, and cashiers checks.
- The WOGCC requests operator bonds and idle well bonds on fee wells. The BLM has a bonding program for federal wells and OSLI implements a bonding program for state wells.
- In rare cases the WOGCC may request a bond for operators who only operate on federal or state lands to ensure compliance with rules and orders of the commission.
- The rules also require notification to the WOGCC prior to the transfer of wells to evaluate bonding requirements. The WOGCC may also hold the previous operator's bond up to 6 months following transfer to evaluate performance and viability of new operator.



## Oil and Gas Bonding

- The idle well bonding requirements impacts the most operators and results in most of the bonding held by the WOGCC.
- Operators can post either individual well bonds at \$10/ft of well depth or they can post \$100,000 blanket bond to cover multiple wells.
- If the operator posts a blanket bond, then the WOGCC does an annual review of their idle fee wells to determine if the amount of idle wells exceeds the operator blanket bond.
  - Total bond required is \$10/ft of idle well depth. If idle well depth exceeds blanket bond amount, additional idle well bond may be due.
  - A plan of operation can be accepted in lieu of bonding and is part of the annual idle well review.
  - The plan of operation should include details on wells that will be removed from the idle well list over the course of the next year by returning to production, transferring, plugging, etc.
  - Wells that do not have a plan and will remain idle require a bond at \$10/ft of well depth.



## Oil and Gas Bonding

- The rules provide the Oil and Gas Supervisor latitude in determining to accept or deny any plans submitted or to increase or decrease bonding requirements.
- Commercial Class II wells are bonded individually at \$10/ft of well depth. The operator's blanket bond or idle well bond does not cover any portion of the commercial disposal well bond.
- Pit bonds are based on an engineering estimate of the cost to close and reclaim the pit. Small pits co-located on a well location that can be reasonably reclaimed while reclaiming the location do not require separate bonds.
- Pit bonds are commonly held for CBM reservoirs, produced water reuse reservoirs, and other large pits/reservoirs.





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Contact:  
Tom Kropatsch  
State Oil and Gas Supervisor  
tom.kropatsch@wyo.gov  
(307) 234-7147