Addressing Legacy Wells in Pennsylvania

A DCNR-DEP Coordination Project: Plugging Orphan and Abandoned Wells on State Forest Land

Natural Gas Advisory Committee
February 28, 2019

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Discussion Points

❖ Brief History on Bureau of Forestry
❖ Oil and Gas Management on State Forest Land
❖ Orphan and Abandoned Well Assessment
❖ DCNR-DEP Coordination Initiative
1895 The Division of Forestry was created within the Department of Agriculture.

1901 State Department of Forestry was established.

1923 Department of Forestry became Department of Forests and Waters.

1929 Leasing for mining and oil and gas operations on State Forest Lands was first legally mandated by the Administration Code of 1929.

1955 Division of Minerals was officially established as part of the Bureau of Forestry in the Department of Forests and Waters.

1970 Act 275 Department of Forests and Waters was renamed the Department of Environmental Resources.

1995 Act 18 assigns Bureau of Forestry to the newly formed Department of Conservation and Natural Resources, which is where Minerals Division now resides.

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Oil and Gas Management on State Forest Land

The Minerals Division initially directed to manage the coal mining, limestone and quarry operations, and oil and gas leases.

- As State Forest Lands were acquired some of the subsurface interests were privately owned (severed ownership) or encumbered by private leases.
- Absence of provisions in private leases that would minimize and/or prevent environmental impacts.
- No opportunities provided to terminate or amend, which left little to no control over leases.
- Minimal or inadequate requirements for well abandonment and plugging.
Oil and Gas Leasing on state land became legally mandated by the Administrative Code of 1929.

The first oil and gas lease issued by the State through the Minerals Division was November 1, 1950.

- Majority of state-issued leases are on **Fee Simple** land - where ownership rights of both surface and subsurface belong to the Commonwealth

- Ability to create a strong agreement with provisions to protect Commonwealth interests and assets, and to prevent health, safety, and environmental risks.

- Allows a more “cradle to grave” management approach
  - From first infrastructure approval to final site rehabilitation and proper well plugging

- Work to continually update and improve lease provisions

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Oil and Gas Management on State Forest Land

Lease Provisions

Strong agreement with provisions to protect Commonwealth interests and assets, and to prevent health, safety, and environmental risks.

- Lease Terms
- Acreage Rentals
- Royalty Rates
- Gas Measurements
- Financial Audits
- Financial Security
- Comprehensive and Pollution Liability Insurance Required
- Development and Well Spacing
- Drilling Restrictions
- Operations and Approval Process
- Unitization
- Pipelines
- Seismic Surveys
- Well Plugging Surety

Currently we have $52,300,000 in well plugging surety bonds as a requirement per the lease under Financial Security.

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Currently, we have 1,035 royalty-producing wells on State Forest Land on Commonwealth issued leases
- 541 conventional wells
- 494 unconventional wells

In addition, we have an estimated 780 producing or permitted wells on severed state forest land

Over time, wells on State Forest Land were plugged:
- 626 wells were plugged by Operators
  (198 of these wells on severed land)
- 28 wells were plugged by DEP
  (all of these wells on severed land)
But we still have wells that need to be plugged...

**Legacy Wells**, the orphan and abandoned oil and gas wells that still remain to be plugged, continue to accumulate and require attention to avoid any looming impacts.

- From the time of Drake (1859) to 1956, record keeping was sparse.
- Since 1956, about 131,000 wells were permitted, and DEP located just over 8,000 legacy wells that need to be properly plugged and abandoned.
- It is estimated there are between 325,000 and 500,000 legacy wells that exist in the Commonwealth.

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The Oil and Gas Act of 1985 designated DEP the authority to plug orphan and abandoned wells.

- The DEP Plugging Program assumes responsibility for addressing legacy wells that have no responsible party. Such wells are classified as DEP Orphaned and DEP abandoned wells.

The act defines such wells as:

- **Orphan Well** – described as “A well abandoned prior to April 18, 1985, that has not been affected or operated by the present owner or operator and from which the present owner, operator or lessee has received no economic benefit other than as a landowner or recipient of a royalty interest from the well.”

- **Abandoned Well** - described as a well that has not been used to produce, extract, or inject any gas, petroleum or other liquid within that preceding 12 months; a well for which equipment necessary for production, extraction or injection has been removed; or a well considered dry and not equipped for production within 60 days after drilling, redrilling or deepening. The term does not include wells granted inactive status.

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The Oil and Gas Act of 1985 also:

- Allowed for allocation of funds to DEP’s Well Plugging Program, based on surcharges assessed to oil and gas permits.
  - **oil permits** - $150 ($50 to abandoned account, $100 to orphan account)
  - **gas permits** - $250 ($50 to abandoned account, $200 to orphan account)
  
  Peak funding was in 2008, at $3.7 million (numerous well permits, very high gas prices)

- Established well surety requirements

DEP plugged its first abandoned well under the Orphan and Abandoned Well Plugging Program in 1989, and has decommissioned 3,072 wells since then.
Unconventional & Conventional Well Drilling Permits Issued
2010 - 2017

Year

Unconventional
Conventional

2010
3364
3232

2011
3560
2185

2012
2469
1564

2013
2965
1645

2014
3182
1268

2015
2081
439

2016
1321
158

2017
2028
203

Legend:
- **Unconventional**
- **Conventional**
Aside from permit surcharges, DEP Plugging Program gets additional funding from proactive coordination efforts:

- Third Party/Good Samaritan Law Plugging - $3.6 million
- Commonwealth Financing Authority (CFA) Orphan and Abandoned Well Plugging Grant Program - $787,000
- Oil Spill Liability Trust Fund - $95,523
- Environmental Stewardship Fund - $460,000
- DCNR - $190,910

Funding for the program in 2017 was about $5.1 million

Partnership is key source of funding – and DEP proactively approached DCNR with an opportunity to collaborate and take on the legacy well issue as it relates to Commonwealth public land.
Assessment of the known Orphan and Abandoned Wells

DEP partnered with Crude Development Advisory Committee (CDAC)

- Enabled evaluation of over 8,000 known orphan and abandoned wells
- Used geostatistical modeling to estimate costs to plug and remediate such wells
- Strategically developed multi-well projects that would be cost efficient and limit disturbance/impacts associated with developing site access
- Used spatial data to characterize project features.

Ultimately created 500 Project Areas state-wide with a potential cost exceeding $218 million dollars to complete – and that’s just for known wells
There are 23 project areas that contain wells on State Forest and State Park Land

➢ There are 100 wells on State Forest Land that DEP has authority to plug
  • 84 of those wells are on severed land

➢ There are 300 wells on State Park Land that DEP has authority to plug

The estimated cost to plug all 400 wells is approximately $21,000,000. This is part of the proposal Minerals has made to start funding and plugging these wells over time.
We already have some pilot projects we are working on with DEP for well plugging through a Memorandum of Understanding:

- D10 Cooks Run Well Plugging
- D9 Tract 119 Well Plugging (3 wells)
**DCNR & DEP Orphan and Abandoned Well Plugging Coordination Project**

**PROJECT:** 44L

**County:** Potter

**Forest District:** 15

**O&A Wells**

State Forest Wells: 8  
Total Wells: 8

**Streams (miles)**

Exceptional Value: 10.46  
High Quality: 0

**Recreational Use**

Forests (acres): 2988.44  
Parks (acres): 0  
Forest Trails (miles): 2.76  
Snow Mobile Trails (miles): 5.60

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**O&A Wells Score**

- Leased Tract
- Leased Storage
- State Forest
- State Gameland
- Wild Plant Sanctuaries
- Natural Area
- Natural Area (Proposed)
- District Boundaries
- Wild Area
- Wild Area (Proposed)

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**Legend**

- Trails (RailTrails) Promoted
- Trails (Cross Country Skiing) Promoted
- Trails (Snowmobile Trails) Open
- Background Trails (All Trails)
DCNR & DEP
Orphan and Abandoned Well Plugging Coordination Project

PROJECT: 113S
County: Potter
Forest District: 15

O&A Wells
State Forest Wells: 2
Total Wells: 2

Streams (miles)
Exceptional Value: 0
High Quality: 2.74

Recreational Use
Forests (acres): 530.86
Parks (acres): 0
Forest Trails (miles): 0
Snow Mobile Trails (miles): 0.81
Why should we be proactively plugging these wells?

- People’s right to clean air, pure water, and to the preservation of the natural, scenic, historic, and esthetic values of the environment (Article 1, Section 27 of the State Constitution)

- Communities would benefit through
  - water quality
  - sensitive ecosystem protection
  - assurance that the Commonwealth’s valuable recreational areas remain well managed
  - establishment of high standards for public safety and health

- Orphan and Abandoned wells continue to accumulate, and thousands of historic conventional wells are at the end of their productive life

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Potential Third-Party entities to join this collaboration

- Environmental Stewardship Fund
- Commonwealth Financing Authority grant proposals
- CDAC Funding initiatives (credits and reimbursements)
- Marcellus Shale Coalition sponsoring collaborative projects
- Operators leasing DCNR land
- Environmental Organizations

**Good Samaritan Act**

volunteers who complete plugging projects under this law are afforded liability relief, mitigating concern from third parties that prevented wells from getting plugged.
Next Steps…

Hear from experts at a future NGAC meeting devoted to legacy well issues:
  DEP
  NETL
  DCNR
  Gas Industry

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Thank you!

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