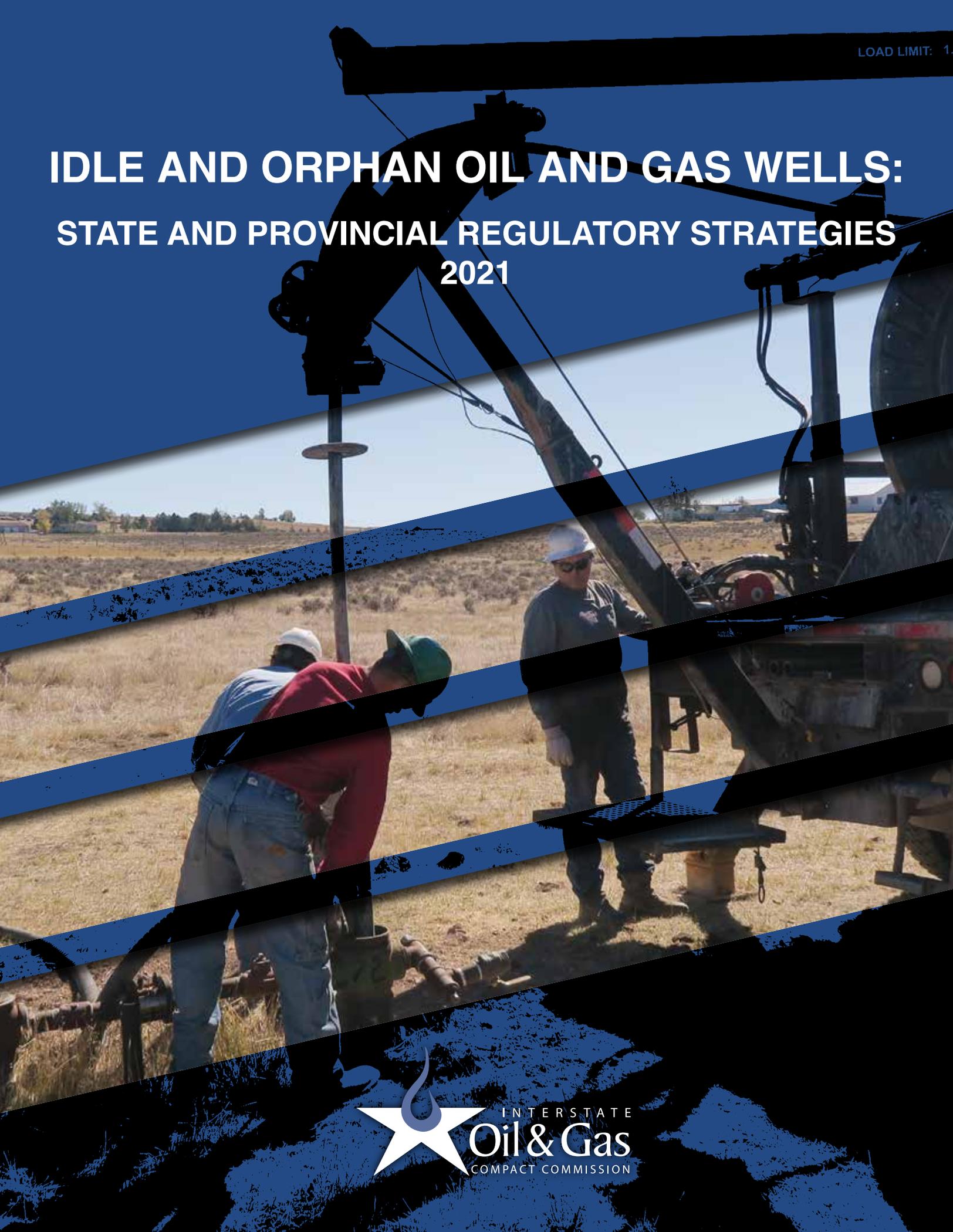


IDLE AND ORPHAN OIL AND GAS WELLS: STATE AND PROVINCIAL REGULATORY STRATEGIES 2021



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2021**





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ABOUT IOGCC

The Interstate Oil and Gas Compact Commission (IOGCC) is a multi-state government agency that champions the conservation and efficient recovery of domestic oil and natural gas resources while protecting health, safety, and the environment. IOGCC provides member states and international affiliates with a clear and unified voice and serves as a primary authority on issues surrounding these vital resources.

ACKNOWLEDGMENTS

The production of this report required a team effort of member states, international affiliates, committees, contractors, and staff. IOGCC extends sincere thanks to those who contributed their time and expertise to make this report an authoritative and useful compilation of information on a topic of paramount importance to the organization and its constituents.

The Council of Regulatory Officials (CRO), under the leadership of the chair, David Hardie of the Alberta Energy Regulator, provided overall direction and support for the project. The CRO consists of regulatory officials of IOGCC's 31 member states, seven associate member states, and seven affiliated Canadian provinces.

Harold "Hal" Fitch of H.R. Fitch Consulting served as the lead author, and IOGCC Executive Director Lori Wrotenbery served as the lead editor. IOGCC Executive Project Manager Amy Childers and Technical Coordinator Kaitlyn Smith assisted in compiling the information included in the report. The State of Wyoming supplied the photo used in the cover graphics, and Daren Shepherd of Shepherd Graphics designed the cover and prepared the report for publication.

Most importantly, IOGCC thanks the states and provinces for responding to repeated requests for data and other information for this report. We trust that the report both honors and supports their continued leadership in establishing effective regulatory programs for idle and orphan wells.

DISCLAIMER

The states and provinces provided a wealth of data and other information for this report. The authors and editors have endeavored to summarize this information in an accurate and meaningful way.

Should you have a question about the contents of this report, feel free to contact IOGCC for assistance. Please note, however, that a question regarding information from a specific state or province may be referred to sources within the state or province, who are the most knowledgeable about their own data and regulations. Note, too, that readers should consult with the state or province before relying on any summary, statement, or interpretation of the requirements or procedures of that state or province.

PREFACE

This report updates and expands upon information previously published by the Interstate Oil and Gas Compact Commission (IOGCC) on the issue of idle and orphan oil and gas wells. It includes data and other information submitted by the states and provinces for calendar years 2018, 2019, and 2020. Like IOGCC's earlier publications on the issue, the primary purpose of this report is to help states and provinces evaluate their idle- and orphan-well programs and identify useful regulatory tools and strategies from other jurisdictions.

We are grateful to the states and provinces for their support in the production of this report. They contributed their time and expertise by responding to the survey and follow-up requests that provided the data and other information published here. They also contributed through their financial support of IOGCC. No other source of funds was used in the production of the report.

Shortly before publication, Congress passed, and the President signed, bipartisan infrastructure legislation that includes funding for the plugging of orphan wells on federal, state, private, and tribal lands. We are gratified that IOGCC's 2019 report on idle and orphan wells, on which this report builds, served as a useful reference in the development of federal legislation.

IOGCC and its member states are already working with federal agencies and others to implement the new legislation. Providing support for this effort will remain a top priority for IOGCC throughout the decade.

Immediately following enactment of the bipartisan infrastructure legislation, IOGCC conducted a short, follow-up survey of the states to obtain updates on their inventories of documented orphan wells. Please refer to the Afterword for more information on the results of the follow-up survey, as well as brief comments on the unparalleled opportunity presented by the federal funding.

EXECUTIVE SUMMARY

This report updates and expands upon the information previously published by the Interstate Oil and Gas Compact Commission (IOGCC) on the issue of idle and orphan oil and gas wells. IOGCC has researched and analyzed this issue for many years, and published reports in 1992, 1996, 2000, 2008, and 2019. Like IOGCC's earlier reports on the issue, the primary purpose of this report is to help states and provinces evaluate their idle- and orphan-well programs and identify useful regulatory tools and strategies from other jurisdictions.

The report covers the numbers of idle and orphan wells, regulatory tools for managing these wells, orphan well plugging and restoration activities and costs, and funding sources for plugging and restoration. It is based on survey responses from 32 IOGCC member and associate member states and five Canadian provinces, including data for calendar years 2018, 2019, and 2020.

IDLE WELLS

Idle wells are wells that have not yet been plugged and are not producing, injecting, or otherwise being used for their intended purpose. Many idle wells have potential for future oil or gas production or associated uses. If not properly monitored and maintained, however, they may pose a risk to the environment, public health, and safety. They also present an elevated risk of becoming orphan wells. States and provinces use various regulatory mechanisms to manage these risks while recognizing the potential for future beneficial uses of idle wells.

Thirty-three states and provinces reported the number of wells approved to remain in idle status. The total number of approved idle wells reported by the states as of December 31, 2020, is 231,287, which is 14 percent of the total number of documented wells that have been drilled but not plugged. In the provinces, the corresponding numbers are 140,183 and 38 percent. The total number of documented wells that have been drilled but not plugged are 1,619,071 in the states and 372,697 in the provinces.

In most states and provinces, idle wells with no future beneficial use must be plugged. In the three years covered by this report, operators plugged 62,463 wells in the states and 16,295 wells in the provinces.

ORPHAN WELLS

Orphan wells are idle wells for which the operator is unknown or insolvent. Most states and provinces maintain inventories of documented orphan wells and prioritize the wells for plugging according to risk.

As of December 31, 2020, the states reported a total of 92,198 documented orphan wells, and the provinces reported a total of 5,015 documented orphan wells. In the states, the number of documented orphan wells increased by 50 percent from 2018 to 2020, due primarily to the efforts of states to document these wells through investigation and verification of the status of wells and their operators.

In the three-year period from 2018 through 2020, the states plugged 9,774 orphan wells and the provinces plugged 4,930. In total through 2020, the states have plugged over 78,000 orphan wells and the provinces almost 6,300.

The cost to plug an orphan well varies widely depending on well depth and condition, location, accessibility, and other factors. For the 25 states that plugged orphan wells from 2018 through 2020, the average expenditure per well ranged from \$2,400 to \$227,000, with an overall three-year average of \$25,634. Most states conduct basic site restoration as part of an orphan well plugging operation.

For the three provinces that plugged orphan wells from 2018 through 2020, the average expenditure per well ranged from C\$37,528 to C\$42,047, with an overall three-year average of C\$41,156. These numbers do not include expenditures for site restoration.

This report contains estimates from some states of the number of undocumented orphan wells, i.e., wells the states have reason to believe exist but have not verified. Most of these wells are a legacy of early oil and gas development in the states. While estimated numbers for some states are large, they do not convey a reliable picture of the actual number or the potential associated risk. The estimates are by their nature imprecise, and many undocumented wells may not constitute a significant risk to the environment or public health and safety. More work needs to be done to identify and assess these wells.

REGULATORY STRATEGIES

State idle and orphan well programs consist of various program elements that work together to ensure that wells are properly plugged at the end of their useful lives. These program elements include requirements for properly monitoring and maintaining idle wells, financial assurance requirements, and other sources of plugging funds.

Most states and provinces have requirements, such as periodic mechanical integrity testing, that must be met for wells to remain idle beyond a specified time. These requirements may be set by statute, rule, or written approval.

Most states and provinces also require financial assurance to provide money for plugging and restoration if the operator defaults. Financial assurance instruments include cash deposits, certificates of deposit, financial statements, irrevocable letters of credit, security interests, and surety or performance bonds. The types accepted and amounts required vary considerably among the states and provinces. The participating states all provide for single-well and blanket coverage, and the participating provinces provide for either single-well or blanket coverage, or both. The amounts may be uniform for all wells, or they may be based on the depth, location, type, or status of well or case-by-case evaluations.

To supplement the funds provided through financial assurance instruments, most states and provinces have established funds dedicated to plugging orphan wells. Money for these funds comes primarily from taxes, fees, or other assessments on the oil and gas industry.

Nineteen states and provinces reported on innovations and advancements in their idle and orphan well programs. Some have added staff, improved their data management systems, and streamlined their contract management processes. Some have adopted new idle well requirements, such as requirements to provide additional financial assurance, demonstrate well integrity, justify keeping wells in idle status, or limit the percentage of wells an operator may hold in idle status. Increasingly, states and provinces are using Geographic Information Systems (GIS) and drone technologies to find orphan wells. They are also collaborating with operators and landowners to address idle and orphan wells and using grant programs, economic stimulus funds, and third-party partnerships for orphan well plugging and restoration.

Through the decades, the states and provinces have made considerable progress in managing idle wells and identifying and plugging orphan wells. They have continued to evaluate and adjust their well operation standards, plugging requirements, inspection and enforcement procedures, financial assurance requirements, and plugging fund provisions to reduce the likelihood of additional wells being orphaned and provide resources for well plugging and site restoration.

States and provinces remain concerned, however, over the potential for escalating numbers of idle and orphan wells. The risk of wells becoming orphans is heightened during periods of oil and gas market volatility or when operators transfer aging wells to other companies. IOGCC will continue to periodically update the data and information in this report and coordinate other projects to support the states and provinces in developing effective regulatory strategies to address these challenges.

INTRODUCTION

PURPOSE AND SCOPE OF REPORT

This report updates the information previously published by the Interstate Oil and Gas Compact Commission (IOGCC) on the issue of idle and orphan oil and gas wells. It is an initiative of IOGCC's Council of Regulatory Officials, which consists of regulatory officials of IOGCC's 31 member states, seven associate member states, and seven affiliated Canadian provinces.

IOGCC has researched and analyzed this issue for many years, and published reports in 1992,¹ 1996,² 2000,³ 2008,⁴ and 2019.⁵ IOGCC also published a brief supplemental report in May 2020⁶ categorizing the population of documented orphan oil and gas wells by land ownership.

In addition to providing data on idle and orphan wells in the U.S. and Canada, this report outlines the regulatory tools and funding sources used to ensure that the responsible operators properly maintain and ultimately plug idle wells and that states and provinces have funds to plug orphan wells. Like IOGCC's earlier reports on the issue, the primary purpose of this report is to help states and provinces evaluate their idle- and orphan-well programs and identify useful regulatory tools and strategies from other jurisdictions.

Information in the report comes from the survey responses of 32 IOGCC member states and five Canadian provinces, including data for calendar years 2018, 2019, and 2020. The report compiles and summarizes data from the survey, compares it to data from previous surveys, and analyzes trends.

TERMINOLOGY

Most of the wells addressed in this report were drilled for production of oil or gas. Others were drilled for related purposes, such as fluid injection for enhanced oil recovery (EOR), waste fluid disposal, gas storage, or monitoring.

States and provinces use varied terms to describe well status. Regardless of the terms used by individual states and provinces, this report addresses wells that have been drilled and not yet plugged. It does not cover wells that have previously been plugged.

For purposes of this report, "idle wells" are defined as wells that are not producing, injecting, or otherwise being used for their intended purpose. "Orphan wells" are defined as idle wells for which the operator is unknown or insolvent. Where a state or province defines one of these terms in a substantially different manner, the state or provincial definition is noted in the "State and Provincial Summaries" section of the report.

The term "documented" is used to describe a well for which the regulatory agency has a drilling report, completion report, inspection report, or other record establishing the existence of the well. The term "undocumented" refers to a well that is entirely unknown to the agency or a well of which the agency has some evidence, but which requires further records research or field investigation for verification.

BACKGROUND

Most newly drilled wells are placed in service for many years or decades. During its life, a well may be converted from one use to another, e.g., from production to injection. It may become idle at different times for different reasons.

Many idle wells can produce oil or gas, but the cost to maintain and operate them may exceed revenue at prevailing oil and gas prices. Others may have potential future value for EOR, waste fluid disposal, gas storage, or other uses. Idle wells, however, may become a risk to the environment or public health and

safety if they are not properly monitored and maintained. The wellbore may deteriorate and become a conduit for oil, gas, or saltwater to migrate into aquifers or to the surface. Idle wells also present an elevated risk of becoming orphan wells and imposing a liability on the state or province for plugging and restoration. States and provinces have established regulatory requirements to manage these risks. Some provide incentives to put idle wells back into operation.

Once a well is determined to have no future beneficial use, it must be plugged, and the site restored. Proper plugging is essential to prevent migration of oil, gas, or saltwater that can damage freshwater resources, soils, and other underground and surface resources. Unplugged wellbores can collapse and create a hazard to humans and animals, and unrestored sites can interfere with other beneficial uses of the land.

Well operators are responsible for plugging wells, and most plugging operations are conducted by the operators and their contractors. If the well operator ceases to exist or becomes insolvent before a well is plugged, the responsibility for monitoring and plugging the well generally falls on individual states and provinces.

States and provinces require well operators to post financial assurance to provide money for plugging and restoration if the operator defaults. Most also have established funds designated specifically for orphan-well plugging. Some others have authority to spend money from operating funds or other sources to plug orphan wells. Money used for plugging comes primarily from production taxes, fees, or other assessments on the oil and gas industry.

Most states and provinces have inventories of documented orphan wells. To make effective use of limited resources, they prioritize the wells for plugging according to the risk to the environment and public health and safety.

Oil and gas drilling in North America began in the middle 1800s. Regulatory requirements were established in most oil- and gas-producing states and provinces in the early to middle 1900s. Many wells that are now orphaned were drilled before there was any regulatory oversight. Many of these pre-regulatory wells were abandoned without being properly plugged. There may be no record of the location, drilling, or construction details for these wells. They often go undetected for years or decades, to be discovered only when new land development takes place in the vicinity of the well.

This report contains estimates from some states of the number of undocumented orphan wells. While estimated numbers for some states are large, they do not convey a reliable picture of the actual number or the potential associated risk. The estimates are by their nature imprecise, and many undocumented wells may not be a significant risk to the environment or public health and safety. More work needs to be done to identify and assess these wells.

STUDY METHODOLOGY

DATA COLLECTION

Data for this report was collected by surveying state and provincial regulatory agencies. The survey requested information on a range of topics to provide insight into state and provincial programs addressing idle and orphan wells. Thirty-two states and five provinces responded to the survey.

For many of the data elements in this report, numbers are shown for 2018, 2019, and 2020. Where inventory numbers fluctuate throughout the year, as in the case of the number of idle and orphan wells, the data is provided as of December 31st of the year.

STUDY LIMITATIONS

The information reported here for the current survey period is quite complete. It is considered reliable, although IOGCC cannot independently confirm the data in most cases, and this report relies on the data as reported by the states and provinces.

ACRONYMS AND ABBREVIATIONS

The following acronyms and abbreviations are used in the report:

EOR:	Enhanced Oil Recovery, i.e., Secondary or Tertiary Recovery
GIS:	Geographic Information System
IOGCC:	Interstate Oil and Gas Compact Commission
MIT:	Mechanical Integrity Test
P&A:	Plugged and Abandoned
TA:	Temporarily Abandoned

STUDY RESULTS

This section of the report provides a summary and analysis of the information collected. More detail on each state or province is provided in the Data Tables and State and Provincial Summaries sections of the report, as well as in the Summary of State Statutes and Regulations⁷ on the IOGCC website.

DOCUMENTED WELLS DRILLED AND NOT PLUGGED

As of December 31, 2020, the states reported a total of 1,619,071 wells drilled and not plugged, and the provinces reported a total of 372,697. **Table 1** shows the breakdown of these wells by the following well types: oil and gas production, oil-and-gas-related injection, oil-and-gas-related monitoring, gas storage, and other.

IDLE WELLS

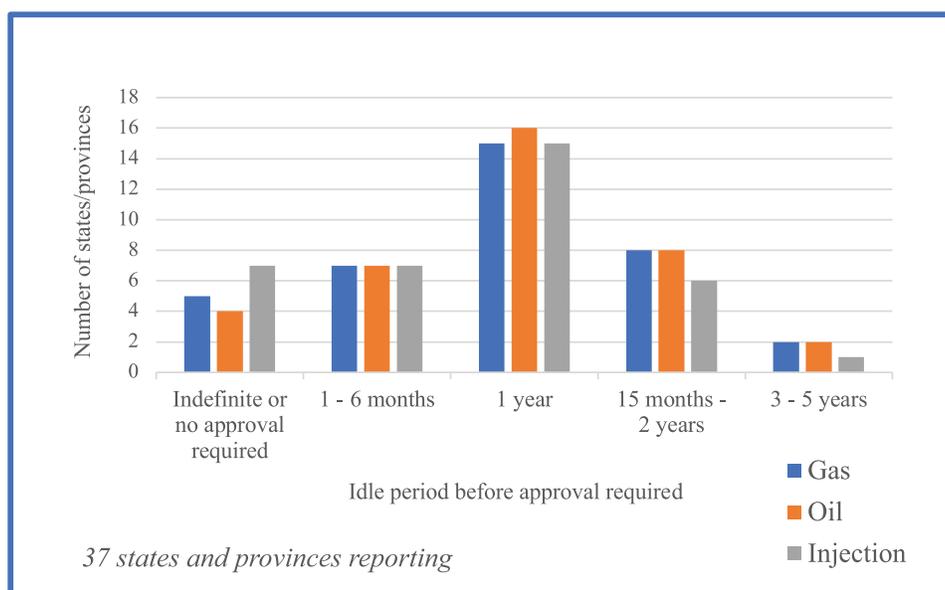
Setting requirements for idle wells is one of the tools the states and provinces use to protect public health and safety and the environment and to prevent idle wells from becoming orphan wells. Compliance may involve meeting criteria in statutes or rules, or it may require applying for and receiving written approval by the regulatory agency.

Most states and provinces specify how long a well may remain idle before approval is required and what requirements must be met for the well to remain idle. States and provinces often require testing and monitoring of idle wells or additional safety measures. Some require additional fees or financial assurance for an operator to maintain a well in idle status.

In most states and provinces, idle wells with no future beneficial use must be plugged by the responsible operators. In the three years covered by this report, operators plugged 62,463 wells in the states and 16,295 wells in the provinces. See **Figures 7** and **8** and **Table 6** for details.

Figure 1 summarizes the period a well may remain idle before approval is required in the states and provinces. See **Table 9** for details.

Figure 1. Period a Well May Remain Idle Before Approval is Required

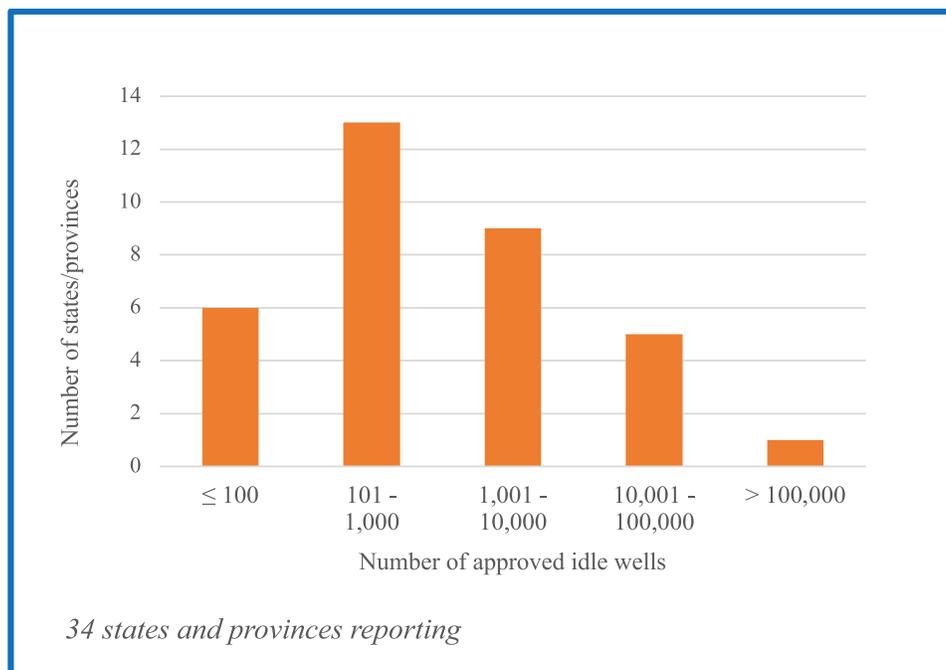


Provisions vary considerably for how long a well may remain in idle status after approval is granted. For details, see **Table 9** and the State and Provincial Summaries section of the report.

Of the 37 participating states and provinces, 34 reported the number of wells that are approved to remain idle. For the states, the number of approved idle wells ranged from zero to 122,944, with a total of 231,287; for the provinces, the number ranged from 88 to 95,512, with a total of 140,183.

Figure 2 summarizes the numbers of approved idle wells in the states and provinces. See **Table 2** for a detailed breakdown by state or province and well type (gas, oil, injection, and other).

Figure 2. Number of Approved Idle Wells (2020)



The ratio of approved idle wells to total wells that have been drilled but not plugged varies widely across the states and provinces. Of the 33 states and provinces that reported approved idle wells, the ratio ranges from less than one percent to 100 percent. The overall average is 14 percent for the states and 38 percent for the provinces.

The number of idle wells in a state or province is a concern because of the potential for the wells to deteriorate over time or become orphans. An even more critical factor is the number of idle wells held by an individual operator, especially as a percentage of the operator's total wells that have been drilled but not plugged. A high percentage of idle wells may indicate an increased vulnerability of the state or province to the operator becoming insolvent and leaving orphan wells. States and provinces use various approaches to ensure operators actively manage their idle well inventories and plug wells with no future beneficial use. See the State and Provincial Summaries section of the report for more information.

DOCUMENTED ORPHAN WELLS

The 32 states participating in this year’s survey reported a total of 92,198 documented orphan wells as of December 31, 2020. While the states continued to plug orphan wells as discussed later in this report, the number of orphan wells documented in the states increased by 50 percent since 2018, largely due to state efforts to complete their inventories. The five participating Canadian provinces reported 5,015 documented orphan wells as of December 31, 2020, a 23 percent increase since 2018.

Changes in the numbers of documented orphan wells are attributable to several factors. Wells are removed from the inventory as they are plugged or are transferred to new operators. Wells are added to the inventory as states and provinces document orphan wells that were previously unknown or unverified and as some operators go out of business.

There are two primary reasons for the increase in documented orphan wells in the past few years. First is the work the states and provinces are doing to identify orphan wells through investigation and verification of the status of wells and their operators. Second is the effect of recent economic turmoil on oil and gas operators. Some operators filed for bankruptcy or went out of business when oil prices collapsed due the combined effects of reduced demand during the pandemic and an international oversupply of oil.

The biggest portion of the recent increase in state numbers reflects the efforts of the states to document their orphan wells. States have focused considerable time and effort on refining their criteria for orphan status consistent with the terminology used in this report, verifying and updating information on operators and wells in their databases, and confirming the existence, status, and location of wells using field inspection and drone surveillance. The result is a more complete inventory of documented orphan wells.

Figure 3 reflects the numbers of documented orphan wells in the states as published through the years in IOGCC reports on idle and orphan wells. Note that **Figure 3** does not include data from the Canadian provinces, which were not surveyed for this data before 2019.

Figure 3. Trend in State Reports of Documented Orphan Wells

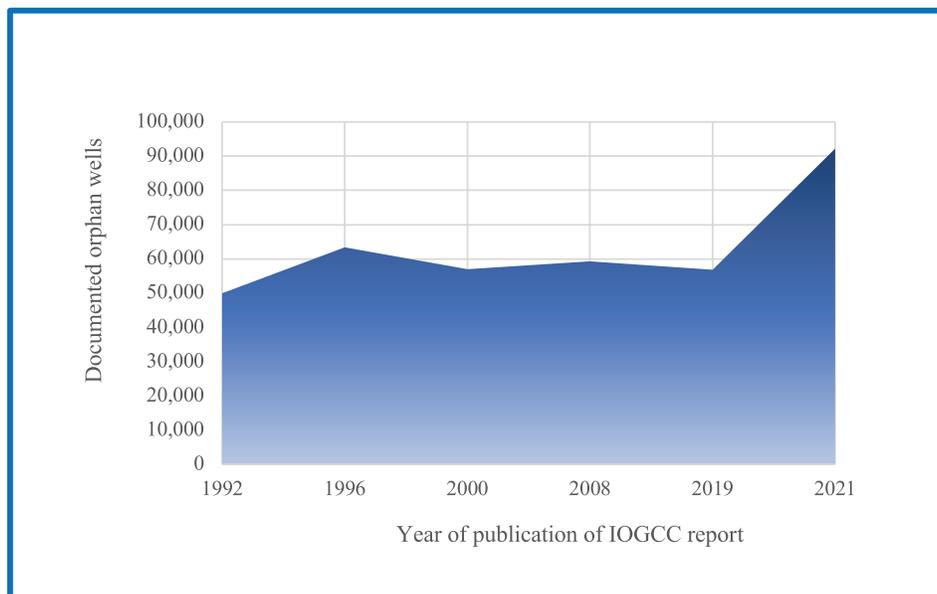
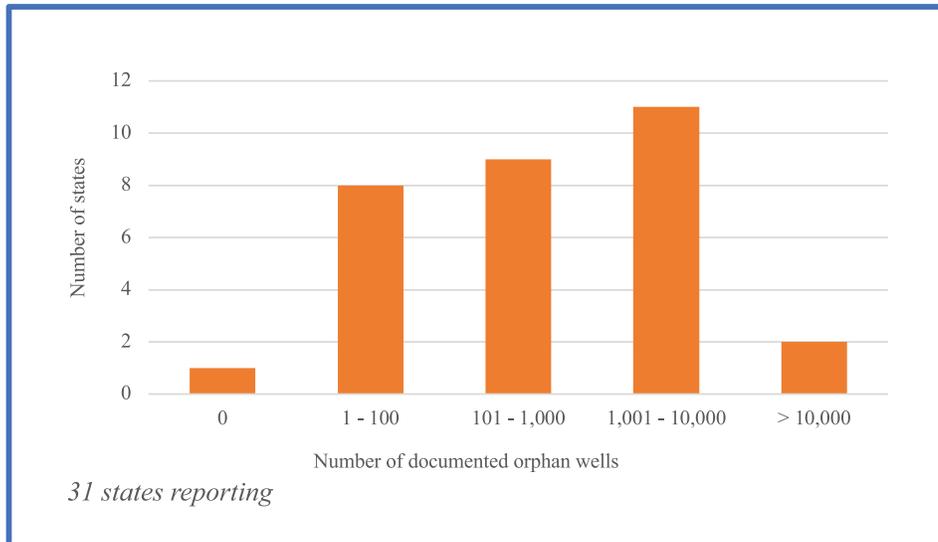


Figure 4 summarizes the numbers of documented orphan wells in the states. See **Table 3** for a detailed breakdown.

Figure 4. Documented Orphan Wells in States (2020)



The number of documented orphan wells by state or province ranges from zero to 27,972 in the states and zero to 2,983 in the provinces. For the states, the ratio of documented orphan wells to total wells that have been drilled and not plugged ranges from zero to 31 percent, with an overall average of 5.7 percent. For the provinces, the ratio of documented orphan wells to total wells that have been drilled and not plugged ranges from zero to 11 percent, with an overall average of 1.4 percent.

In many cases, the states and provinces have a record of the last known operator of an orphan well. Twenty-three states and four provinces reported on how many of their documented orphan wells have known operators. In the 23 states, the operator is known for 78 percent of these wells. In the four provinces, the operator is known for all but two wells.

Figure 5 summarizes the information reported by the states and provinces on known operators. See **Table 4** for details.

Figure 5. Documented Orphan Wells with Known Operators (2020)

	States (23 reporting)		Provinces (4 reporting)	
Documented orphan wells	69,615		5,015	
With operator known	54,001	78%	5,013	100%
Known operators of orphan wells	8,060		267	
With 1 well	4,128	51%	120	45%
With 2-10 wells	2,987	37%	88	33%
With 11-100 wells	881	11%	49	18%
With >100 wells	64	1%	10	4%

Table 5 contains information reported by the states and provinces on the classification of their documented orphan wells by land ownership. A large majority of the documented orphan wells reported by the states are located on private lands. Fewer occur on state lands or federal/tribal lands.

All states cover wells on private and state lands in their documented orphan well counts. They do not all cover wells on federal/tribal lands in their counts. Some states do not track wells on federal lands at all or do so only incidentally, as for example when addressing the wells owned by an operator in bankruptcy. Other states track all documented orphan wells without regard to land ownership.

For federal lands, the Bureau of Land Management, the Forest Service, or another federal land management agency has jurisdiction over oil and gas operations. There is some variation among the states as to the application of state regulations to wells on federal lands, and there is some variation between federal agencies and their regional offices as to collaboration with the states. As a result, states may or may not include wells on federal lands in their tallies of orphan wells.

The oversight situation is similarly complicated for tribal lands. Some tribes defer to the states for regulation; others maintain exclusive authority and may or may not share information with the state regulatory agency.

UNDOCUMENTED WELLS

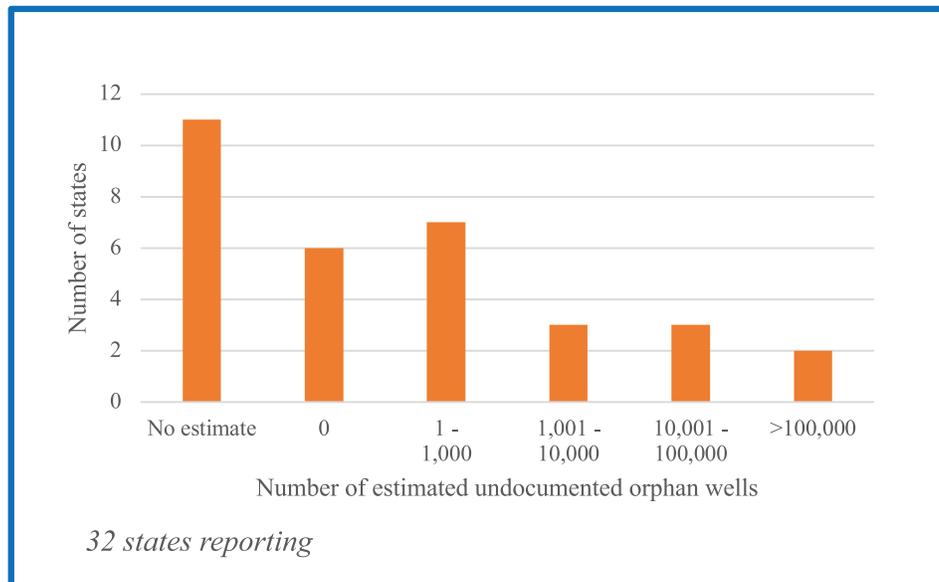
The term “undocumented well” refers to a well that is entirely unknown to the regulatory agency or a well of which the agency has some evidence, but which requires further records research or field investigation for verification. Undocumented wells are typically wells, sometimes called “legacy wells,” that were drilled early in the history of oil and gas development in a region and were abandoned before the regulatory programs were established.

Undocumented wells present special challenges. They often go undetected for years or decades. Leakage of oil, salt water, or gas from an undocumented orphan well is sometimes observed by the landowner or other person using the property. Landowners may discover these wells as they develop their properties. Currently states are exploring the possibilities of using advanced technologies, such as electromagnetic surveys conducted with drones, to identify these wells.

For 2020, the total number of undocumented orphan wells estimated by participating states is between 310,000 and 800,000. Eleven states did not report an estimate. Six other states and all five provinces reported they have no undocumented orphan wells. The remaining 15 states reported an estimate of six to 100,000 or more undocumented orphan wells.

Figure 6 summarizes the estimated numbers of undocumented wells reported by states and provinces. The detailed breakdown appears in **Table 3**.

Figure 6. Estimated Undocumented Orphan Wells in States (2020)



These estimates are by their nature imprecise. Some states reported a wide range in the estimated number and others were unable to provide any reliable estimate. Of the states that reported an estimate, eight based their estimates on information from historical records such as newspaper accounts or other sources that cannot be verified; the others based them on extrapolation from known occurrences, studies of orphan wells, review of accounts of pre-regulatory wells, or a combination of those sources.

The potential risk to public health and safety or to the environment from undocumented orphan wells varies considerably, depending on well depth, geologic setting, location, and other factors. Some wells certainly pose a threat of leakage or other hazards. Others, however, may constitute only a minimal risk. Many pre-regulatory wells were drilled to relatively shallow depths—often several hundred feet or less—and may not provide conduits for oil, gas, or saltwater migration. States are working to better define the numbers, locations, and risks of undocumented orphan wells, but these efforts involve significant time and resources.

ORPHAN WELL PLUGGING AND SITE RESTORATION

The states and provinces accelerated the pace of their orphan well plugging operations over the last three years. Twenty-five states and provinces plugged orphan wells in 2018 and 2019, and 27 states and provinces plugged orphan wells in 2020. States and provinces plugged a total of 6,580 orphan wells in 2020, compared to 3,415 in 2018 and 4,709 in 2019. In the three-year period from 2018 through 2020, the states plugged 9,774 orphan wells, and the provinces plugged 4,930. In total through 2020, the states have plugged over 78,000 orphan wells and the provinces almost 6,300.

Figure 7 shows the number of wells, including orphan wells, plugged in the states each year. Most of the wells in the other category were plugged by the responsible operators. **See Tables 6 and 7** for more detail.

Figure 7. Wells Plugged in States

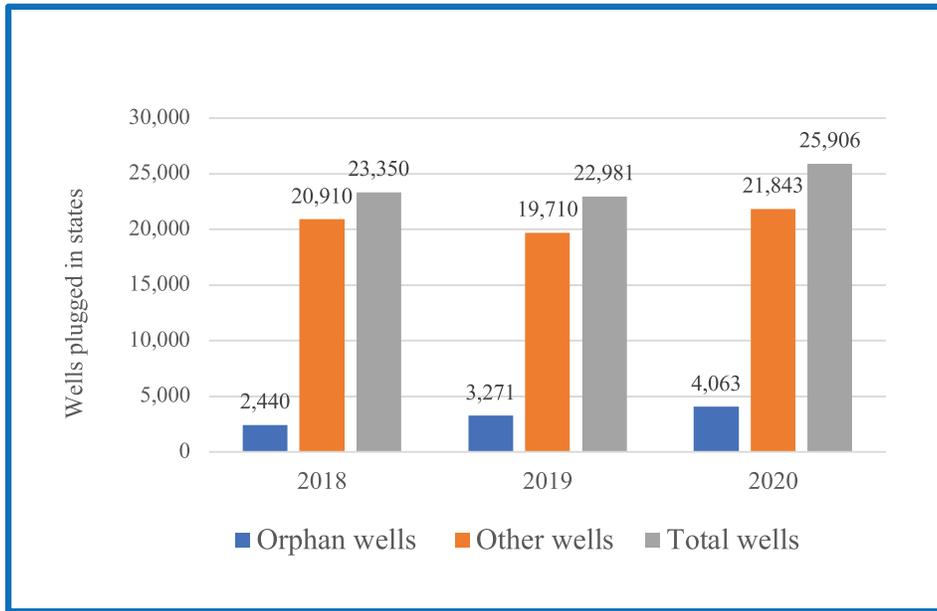
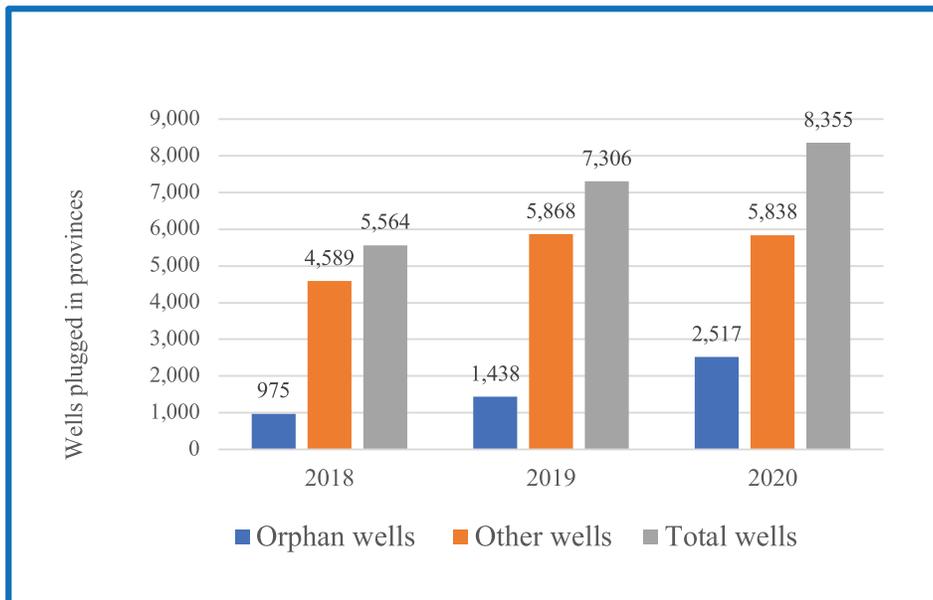


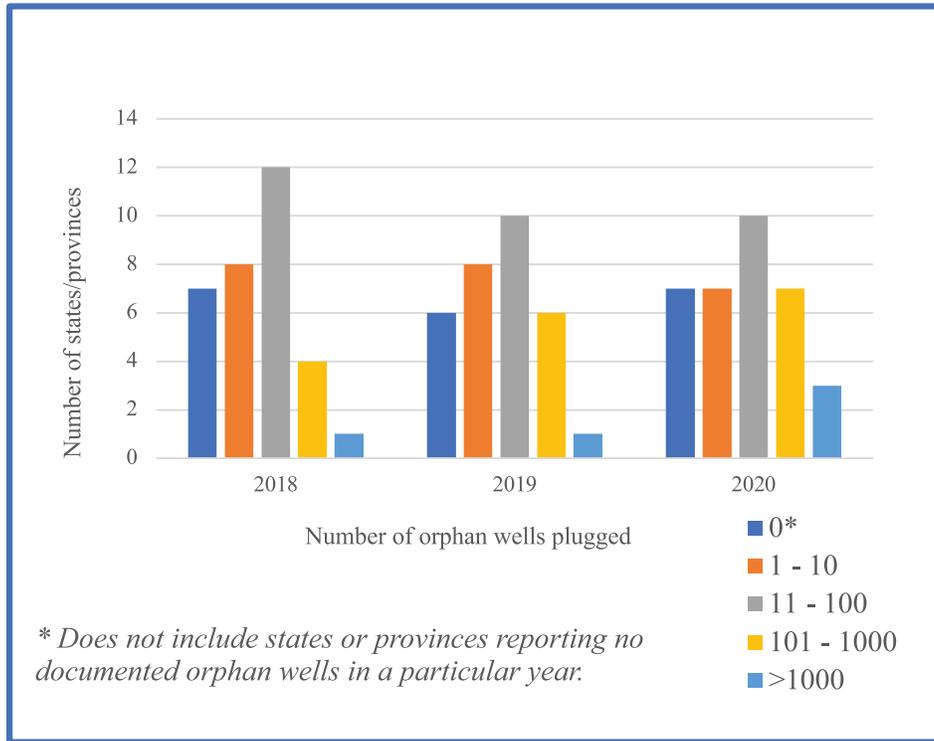
Figure 8 shows the number of wells, including orphan wells, plugged in the provinces each year. Again, most of the wells in the other category were plugged by the responsible operators. See **Tables 6** and **7** for more detail.

Figure 8. Wells Plugged in Provinces



The annual number of orphan wells plugged by an individual state or province ranged from zero to 1,922, with most states and provinces plugging from one to 100 wells each year. **Figure 9** summarizes the number of orphan wells plugged by states and provinces in 2018, 2019, and 2020. See **Table 7** for more detail.

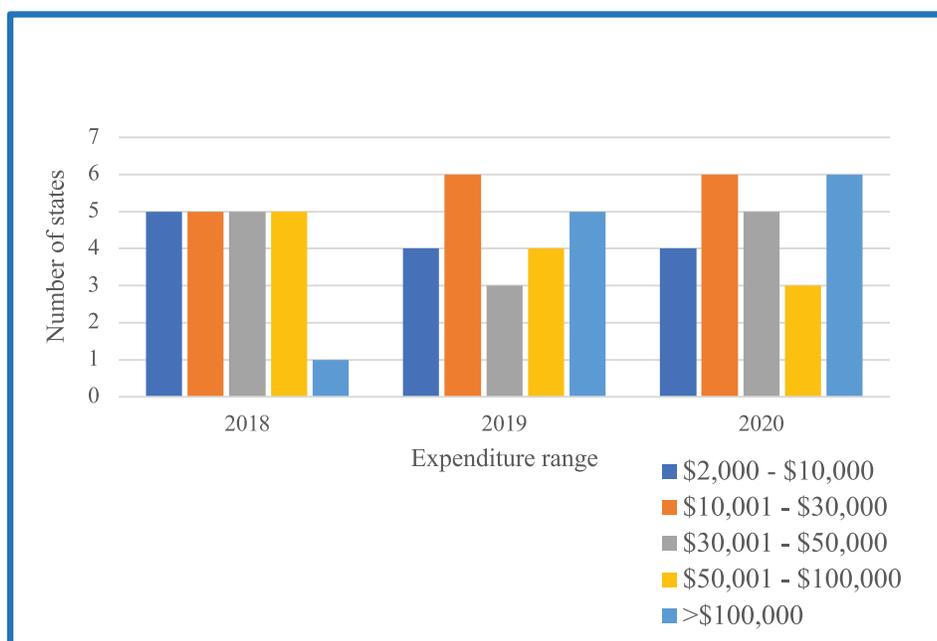
Figure 9. Orphan Wells Plugged in States and Provinces



The cost to plug an orphan well varies widely depending on well depth and condition, location, accessibility, and other factors. For the 25 states that plugged orphan wells from 2018 through 2020, the average expenditure per well ranged from \$2,400 to \$227,000, with an overall three-year average of \$25,634. The overall average for the states was \$20,527 in 2018, \$23,410 in 2019, and \$30,450 in 2020.

Figure 10 summarizes the range of average plugging expenditures for the states in 2018 through 2020. See **Table 7** for the plugging expenditures by state.

Figure 10. Orphan Well Plugging Expenditures in States



For the three provinces that plugged orphan wells from 2018 through 2020, the average expenditure per well ranged from C\$37,528 to C\$42,047, with an overall three-year average of C\$41,156. In contrast to the states, where average plugging expenditures increased over those three years, the average expenditures for the three provinces declined from C\$57,949 in 2018, to C\$42,559 in 2019, to C\$33,850 in 2020. See **Table 7** for more detail.

Twenty-nine states and provinces provided information on their site restoration activities related to orphan wells. In this report, site restoration is defined as removal of equipment, trash, and debris, repair of erosion, removal of hydrocarbons, closure of pits, and associated activities. It does not include groundwater remediation. The restoration actions required at orphan well sites vary widely depending on the nature, age, condition, and location of the sites.

The information gathered for this report does not support a determination of the overall average expenditure for site restoration because of the differences among the states and provinces in how they define terms, conduct operations, and allocate costs. Most states conduct basic site restoration as part of an orphan well plugging operation. For these states, the expenditures reported in **Table 7** combine plugging and basic site restoration, and the amount expended for site restoration is not broken out.

As noted in **Table 7**, three states and the three provinces that plugged orphan wells conduct and account for plugging and restoration separately. Other states conduct site restoration at some sites separately even if they conduct basic site restoration as part of orphan well plugging. See **Table 8** for details on the restoration activities that have been accounted for separately.

Other factors further complicate the analysis of site restoration costs. For example, well sites restored in a year may not correspond with wells that were plugged that year, and in some states and provinces, various aspects of restoration are carried out by separate agencies. Also, the state or province may carry out restoration for wells that have been plugged—sometimes years earlier—by an operator that has since ceased to exist.

SOURCES OF FUNDS

To plug orphan wells, most states and provinces use the proceeds of financial assurance supplemented with other funds. Three quarters of the states and provinces responding to the survey have established funds designated specifically for orphan-well plugging. Others have authority to spend money from operating funds or other sources to plug orphan wells. Funds used for plugging come primarily from production taxes, fees, or other assessments on the oil and gas industry.

Figure 11 shows sources of funding used by the states and provinces to cover plugging of orphan wells and restoration of well sites. Most states and provinces use funds from more than one of the sources listed. See **Table 10** for details by state and province.

Figure 11. Funding Sources for Plugging Orphan Wells, States and Provinces

Funding Source	Number of States/ Provinces
Annual fee	8
Idle well fee	7
Permit fee	11
Civil penalties	8
Settlements	6
Appropriations	8
Forfeited bonds	24
Salvage	13
Excise tax	4
Production assessment	11
Other	11
None	5

The sources listed in **Figure 11** are described as follows:

Annual fee: Routine fee charged to operators of oil and gas wells.

Idle well fee: Fee an operator pays for an inactive, unplugged well.

Permit fee: Fee an operator pays when applying for a permit to drill or produce.

Civil penalty: Penalty imposed by a regulatory authority for noncompliance.

Settlement: Binding agreement for payment in lieu of court proceedings in an enforcement matter.

Appropriations: Legislative action authorizing the expenditure of funds for some designated purpose.

Forfeited bonds: Monies collected on surety bonds or other forms of financial assurance provided by operators.

Salvage: Proceeds from the sale of any equipment or other items of value at a plugging site.

Excise tax: Tax imposed on the sale of specific goods or services.

Production assessment: A state or provincial tax or fee on oil and gas products levied at the wellhead.

While only 13 states and provinces identified salvage as a funding source for orphan well plugging, 21 reported recovering salvage value as part of the plugging process, often as a deduction from the amount

due the plugging contractor. **Table 12** identifies those 21 states and provinces. States and provinces indicate there is usually minimal, if any, salvage value associated with orphan wells.

Financial Assurance

Financial assurance (sometimes referred to as “bonding”) is one of the tools used to ensure the regulatory authorities have resources to plug an oil and gas well and restore the site in the event the well becomes an orphan. The types and amounts of financial assurance vary among the states and provinces. The states and provinces have continued to evaluate and adjust their financial assurance requirements to ensure the types and amounts provide effective coverage in combination with other sources of plugging funds.

States and provinces reported the types of financial assurance accepted in their jurisdictions. Financial assurance instruments include cash deposits, certificates of deposit, financial statements, irrevocable letters of credit, security interests, and surety or performance bonds. Most accept more than one type. **Figure 12** summarizes the types of financial assurance accepted by the states and provinces. **Table 11** provides the details.

Figure 12. Types of Financial Assurance Accepted by States and Provinces

Type of Security	Number of states and provinces accepting
Cash Deposit	26
Certificate of Deposit	26
Financial Statements	5
Letter of Credit, Irrevocable	27
Surety or Performance Bond	32
Security Interest	2
Other	3

The types of financial assurance are described as follows:

Cash Deposit: A payment given as a guarantee that an obligation will be met.

Certificate of Deposit: A financial instrument certifying that the face amount is on deposit with the issuing bank to be redeemed for cash by the state if required.

Financial Statement: A report of basic accounting data that depicts a firm’s financial history and activities.

Letter of Credit, Irrevocable: A letter of credit where payment is guaranteed if stipulated conditions are met.

Surety or Performance Bond: A contract by which one party agrees to make payment on the default or debt of another party.

Security Interest: The right to take property or a portion of property offered as security.

Other: Other forms of financial assurance such as certificates of insurance, consolidated financial funds, escrow accounts, and liens.

States and provinces also reported the amounts of financial assurance required in their jurisdictions. The amounts may be uniform for all wells, or they may be based on the depth, location, type, or status of well

or case-by-case evaluations. Most states and provinces provide for single-well coverage (a specified amount for each well) as well as blanket coverage (a specified amount that covers multiple wells, often capped at a maximum number).

Table 11 shows the amounts of financial assurance required by the states and provinces. These requirements are summarized here:

Single-Well Coverage

- Seven states have a set amount per well, ranging from \$2,500 to \$400,000.
- Two states base the amount on well depth, \$2 per foot in one and \$10 per foot in the other.
- Two states have a base amount plus an amount per foot or acre.
- Twenty-one states and one province have multi-tier amounts, ranging from a minimum of \$1,100 to a maximum of \$500,000.
- One province does not provide for single-well coverage, and two others use a case-by-case evaluation to determine amounts.

Blanket Coverage

- Eleven states have a set blanket amount, ranging from \$15,000 to \$100,000.
- Twenty-one states have multi-tier blanket amounts, ranging from a minimum of \$7,500 to a maximum of \$30,000,000.
- Two provinces do not provide for blanket coverage, and two others use a case-by-case evaluation to determine amounts.

Plugging and restoration costs rise over time due to inflation and in some cases due to improved and more stringent regulatory requirements for materials and methods. States and provinces typically review and revise their financial assurance requirements periodically to account for these increases.

The amounts of financial assurance may not fully cover orphan well plugging costs for several reasons. Many orphan wells were drilled before financial assurance requirements were instituted. For many others drilled decades ago, the financial assurance amounts were set at levels that were considered sufficient at the time but may not be commensurate with today's costs or plugging standards. Resetting the amounts may cause wells to be abandoned prematurely and increase the number of orphan wells. Some companies that provide surety or performance bonds have gone bankrupt or have not covered their obligations for other reasons. In other instances, financial assurance amounts were set at levels to cover typical costs of plugging operations but may not cover wells with unusually high or unpredictable plugging costs. For these reasons, the states and provinces supplement the proceeds of financial assurance with other sources of funding for plugging and restoration. These other sources often include dedicated plugging funds.

Plugging Funds

For this report, a plugging fund is a separate and distinct fund specifically intended to address orphan wells or a portion of another fund that may be used to address orphan wells. In 1939, Illinois became the first state to establish a plugging fund. Most plugging funds originated in the 1970s through the 1990s, with the most recent established in 2014. The money in the plugging funds comes primarily from the oil and gas industry in the form of forfeited financial assurance instruments, production taxes, fees, penalties, and other assessments.

Of the 37 states and provinces that participated in the survey, 28 have plugging funds. Two other states and one other province do not have a plugging fund but have authority to spend money from operating funds or other sources to plug orphan wells. See **Table 12** for more information.

Sixteen states and provinces have an annual authorized expenditure target for their plugging funds. Nineteen have authority to use plugging fund money for emergency remedial actions at wells that are not orphan wells, with subsequent action to obtain reimbursement of these expenditures from the responsible operator.

PROGRAM IMPROVEMENTS

Nineteen states and provinces reported on innovations and advancements in their idle and orphan well programs. Some have added staff, improved their data management systems, and streamlined their contract management processes. Some have adopted new idle well requirements, such as requirements to provide additional financial assurance, demonstrate well integrity, justify keeping wells in idle status, or limit the percentage of wells an operator may hold in idle status. Increasingly, states and provinces are using Geographic Information Systems (GIS) and drone technologies to find orphan wells. They are also collaborating with operators and landowners to address idle and orphan wells and using grant programs, economic stimulus funds, and third-party partnerships for orphan well plugging and restoration.

INCENTIVES

Fifteen states and one province reported on incentives related to idle and orphan wells.

Incentives to Reactivate Idle Wells

Eleven states and one province report current or pending incentives to reactivate idle wells:

Alberta: The Alberta Energy Regulator’s security deposit requirements encourage proactive management of company liabilities.

Arkansas: The state provides severance tax reductions in certain circumstances.

California: If an operator returns a well to production that has been inactive for the preceding five consecutive years or has been determined by the supervisor to be deserted, then the annual oil and gas assessments will be reduced to zero for the 10 subsequent years. If an operator reactivates an idle well and the well is active for six consecutive months, the operator will not have to pay idle well fees for the well.

Colorado: State rules require additional financial assurance for an operator with “excess” inactive wells. An operator may request a release of a portion of the additional financial assurance if a well is reactivated.

Illinois: Wells may be transferred to a new permittee that intends to place the wells back into production. Plugging costs become the liability of the new permittee.

Indiana: The state has enacted a well testing agreement program whereby operators may test orphan wells for a limited time to find out if they have any value before assuming responsibility for them. This program has resulted in some wells being reactivated and removed from the orphan well list each year.

Kentucky: An operator may apply for a permit, with a \$25 fee, to test an orphan well for 60 days without commitment or penalty. After 60 days, the operator must either bond the well and assume ownership or return the well to its prior status.

Louisiana: The Inactive Well Incentive Program established by statute in 2017 allows for the reduction of severance taxes due on all well production for a period of 10 years for a qualifying inactive well.

Michigan: The state allows a new owner to acquire idle wells to be put into production if they meet certain criteria.

South Dakota: The Department of Agriculture and Natural Resources and the Board of Minerals and Environment now have authority and discretion to require an additional \$20,000 bond for each idle well. Release of this bond provides an incentive for reactivation.

West Virginia: The state provides a severance tax exemption for idle wells that have been reactivated.

Wyoming: Upon reactivation, a well is removed from the idle well list and the idle well bond is refunded.

Incentives to Plug Orphan Wells

Seven states reported current or pending incentives to plug orphan wells:

Colorado: The state is conducting a pilot test of an operator reimbursement process for orphan well plugging. It will provide direct reimbursement or a levy credit.

Illinois: Under the state's Landowner Grant Program, an eligible landowner may receive up to five grants per year for orphan well plugging. Grants are awarded on a first-come, first-served basis and are awarded considering well condition (i.e., whether leaking), cost, and the proposed plugging contractor.

Kansas: The Kansas Legislature passed a bill during the 2021 session directing the Kansas Corporation Commission to develop regulations whereby any person may apply to be reimbursed for plugging abandoned wells for which they are not responsible. Regulations are currently being drafted.

Louisiana: The state offers a program where an operator may enter into a cooperative agreement with the department to plug an orphan well and receive an exemption from financial security requirements for a well of similar depth in the same field.

Ohio: The Ohio orphan well plugging statute allows the landowner to have an orphan well plugged. Recent revisions require the state to pay the reasonable plugging costs directly to the plugging contractor rather than reimburse the landowner, resulting in state income tax savings to the landowner.

Pennsylvania: The state has a Good Samaritan Act, under which an individual or contractor may plug a well for which they are not responsible by paying costs or providing supplies and/or equipment. If an individual or contractor meets criteria, they receive liability relief for plugging the well, and grant programs are available.

Texas: A program established in 2005 authorizes the Railroad Commission to reimburse surface estate owners up to 50 percent of the cost of plugging an orphan well.

AREAS FOR FURTHER WORK

Through the decades, the states and provinces have made considerable progress in managing idle wells and identifying and plugging orphan wells. They have continued to evaluate and adjust their well operation standards, plugging requirements, inspection and enforcement procedures, financial assurance requirements, and plugging fund provisions to reduce the likelihood of additional wells being orphaned and provide resources for well plugging and site restoration.

States and provinces remain concerned, however, over the potential for escalating numbers of idle and orphan wells. The risk of wells becoming orphans is heightened during periods of oil and gas market volatility or when operators transfer aging wells to other companies.

IOGCC is committed to supporting the states and provinces in their efforts to assess the effectiveness of their idle and orphan well programs and identify tools and strategies from other jurisdictions that may be useful. In addition to periodically updating the data and information in this report, IOGCC will coordinate other projects to assist the states and provinces in developing effective regulatory strategies to address the challenges of idle and orphan wells.

This section of the report describes five topics IOGCC intends to address further. In addition, IOGCC will work with the states, federal agencies, and tribes in implementing the orphan well funding provisions of recently enacted federal legislation. See the Afterword for further discussion of this legislation.

IOGCC REPORT ON INFRASTRUCTURE AND LIABILITY TRANSFER

It is common for operators to transfer wells and associated facilities and pipelines to other companies. State and provincial regulators have a special concern with transfers of wells with declining production because of the increased risk that such wells may become orphans. Many states and provinces have implemented measures to reduce this risk by setting additional requirements for financial assurance and by evaluating corporate solvency and compliance history and the status and condition of the wells and associated facilities and pipelines before approving a transfer.

IOGCC's Legal and Regulatory Affairs Committee, in cooperation with the International Committee, published a report in 2018⁸ containing the results of a survey of states and provinces on transfers of infrastructure and liabilities. This report was designed to serve as a resource for states and provinces that are evaluating additional regulatory safeguards to reduce the potential for wells and associated facilities and pipelines to be transferred to operators without the requisite operational and financial capabilities. IOGCC will work with the states and provinces to review and update the information available through this report.

ORPHAN WELLS ON FEDERAL AND TRIBAL LANDS

As noted in this report, the information available to states concerning idle and orphan wells on federal and tribal lands is often incomplete. IOGCC looks forward to continuing a dialogue recently begun with officials of the U.S. Department of Interior (DOI) to strengthen the working relationship between state, federal, and tribal authorities on issues relating to idle and orphan wells. Improved communication, coordination, and cooperation among these authorities will improve the management of idle and orphan wells, regardless of land ownership.

FEDERAL FUNDING UNDER THE OIL POLLUTION ACT

IOGCC will continue to pursue an administrative or legislative clarification of the cost recovery provisions of the Oil Pollution Act of 1990 (OPA) consistent with IOGCC Resolution 19.054.⁹ This resolution urges Congress to amend the Oil Pollution Act of 1990 to clarify that surface owners and royalty interest owners who have not produced or participated in ownership of wells are not “responsible parties” and therefore will not be subject to cost recovery efforts under OPA.

As currently applied, language in OPA exposes these surface owners and royalty interest owners to liability when an orphan well is plugged with OPA funds. This application of the OPA liability provisions has harmed innocent landowners and discouraged states from working in partnership with federal agencies to make use of OPA funding for plugging of orphan wells. If the language of the Act, or the implementing administrative procedures, were adjusted consistent with IOGCC Resolution 19.054, states and federal agencies could make greater use of existing OPA funding to plug orphan wells that pose a threat to surface waters.

REVIEW OF CONTRACTING PROCEDURES

Some states and provinces express frustration over the difficulties of retaining contractors to plug orphan wells. Government procurement procedures can be cumbersome and may discourage contractors from competing for state contracts. Also, states and provinces must compete for contractors with oil and gas operators who conduct the majority of well plugging operations.

Some states and provinces have implemented new approaches to procurement and contracting that have enabled them to engage plugging services more competitively and efficiently. IOGCC will gather the states and provinces in an appropriate forum to share information on effective practices for procuring plugging services and managing plugging contracts.

ASSESSING POPULATIONS AND RISKS OF UNDOCUMENTED WELLS

This report describes some of the challenges of identifying and assessing undocumented orphan wells, which are a particular concern in some states with a long history of oil and gas drilling and production. Due to the uncertainties surrounding this category of wells, the current estimates and characterizations of these wells are broad and general and the risks to public health and safety and the environment are unquantified. The development of effective strategies for addressing these wells requires further research on technologies and practices for identifying and assessing them.

The Infrastructure Investment and Jobs Act¹⁰ includes funding for the U.S. Department of Energy (DOE) to conduct research and development activities in cooperation with IOGCC to assist the states, federal agencies, and tribes in identifying and characterizing undocumented orphan wells and mitigating the environmental risks of these wells. IOGCC looks forward to working with DOE in this effort.

AFTERWORD

Shortly before publication of this report, Congress passed, and the President signed, the bipartisan Infrastructure Investment and Jobs Act (IIJA). Among its many initiatives, the IIJA provides funding for the plugging of orphan wells and the performance of associated remediation, reclamation, and decommissioning activities on federal, state, private, and tribal lands. The twofold objective of this funding is to address the potential hazards of orphan wells while creating jobs for oil and gas workers.

The appropriations in the legislation include \$4.275 billion in grants to states for orphan wells on state and private lands. Three types of state grants will be available: initial grants of up to \$25 million per state for rapid deployment of plugging crews or up to \$5 million per state for capacity building; a total of \$2 billion in grants to be allocated to the states based on a formula developed by the Secretary of Interior; and performance grants of up to \$70 million per state based on improvements in state programs. The appropriated funds will be available through federal fiscal year 2030.

With the funding provided under the IIJA, the states will accelerate the work they are doing to plug orphan wells, restore well sites and adjacent lands, and decommission associated pipelines, facilities and infrastructure. This funding will also enable states to identify and assess currently undocumented orphan wells with help from federal research and development.

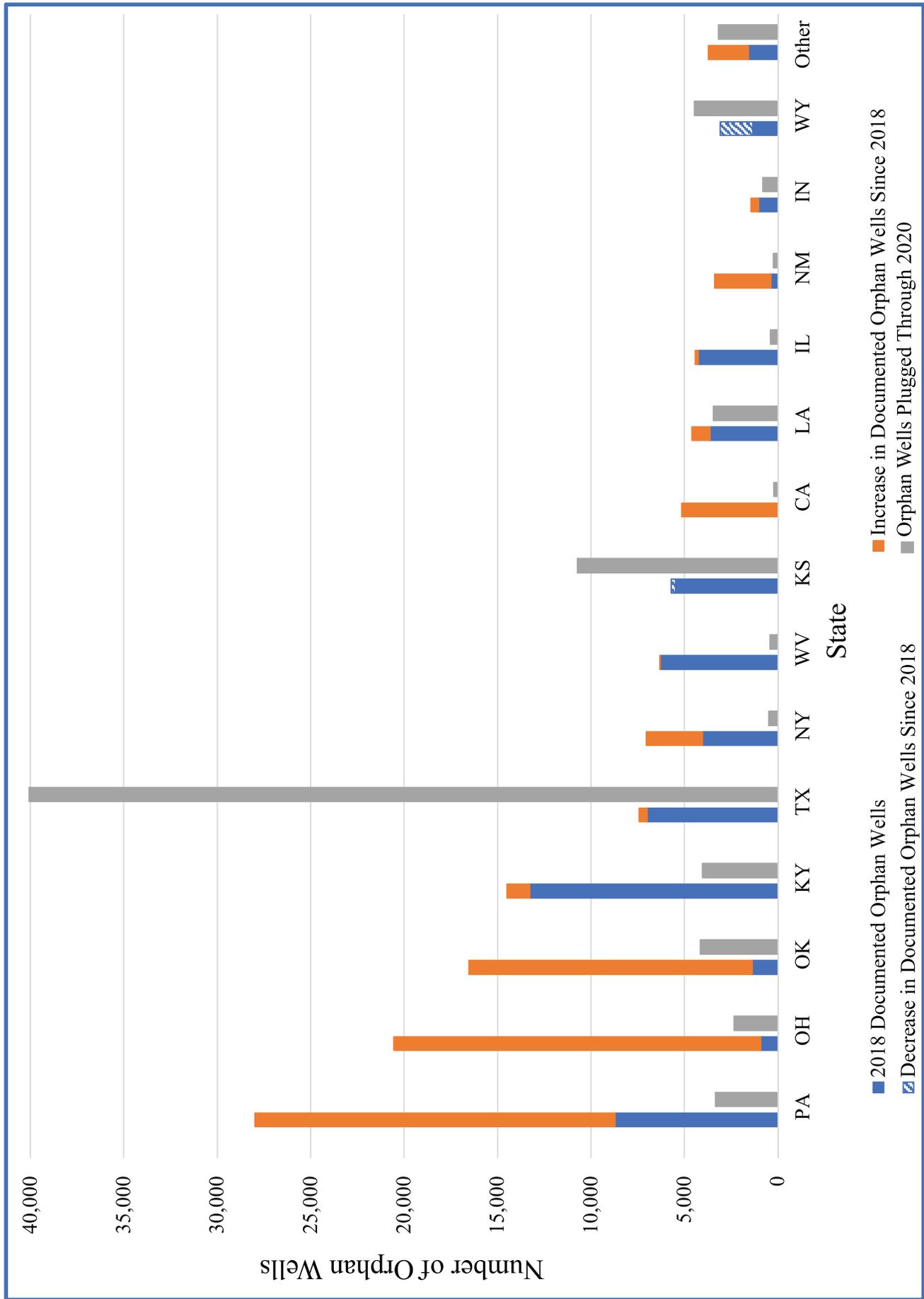
At the time of publication of this report, IOGCC and its member states are already working with the U.S. Department of Interior (DOI) and the U.S. Department of Energy (DOE) to implement this legislation. The first statutory deadline is December 30, 2021, when states that will apply for a formula grant must submit a notice of intent. The notice of intent includes information on job losses since March 2020, the number of documented orphan wells on state and private lands, and the projected costs of plugging, reclamation, and decommissioning. The Secretary of Interior will consider this information in establishing the formula for distribution of formula grant funds to the states.

In anticipation of this process, IOGCC conducted a short survey of the states to obtain the updated information on their inventories of documented orphan wells. **Figure 13** presents the information reported by states in response to this survey. See **Tables 3, 7, 13a, and 13b** for further details.

Figure 13 offers a glimpse of the scope and magnitude of the effort required to address the documented orphan wells, not to mention the still undocumented orphan wells. States will submit their first applications for IIJA grant funding in the spring of 2022 and will apply for and use grant funds through the remainder of the decade. Success will be measured largely by the number of orphan wells plugged. Plugging on the scale envisioned will involve a major deployment of plugging and remediation crews. It will also require close cooperation between federal agencies, states, tribes, and providers of plugging and remediation services.

Providing support for this effort will remain a top priority for IOGCC throughout the implementation of this legislation. IOGCC and its members states appreciate the unparalleled opportunity this funding presents. We are committed to making the most of it.

Figure 13. Documented Orphan Wells as of ILJA Enactment



DATA TABLES

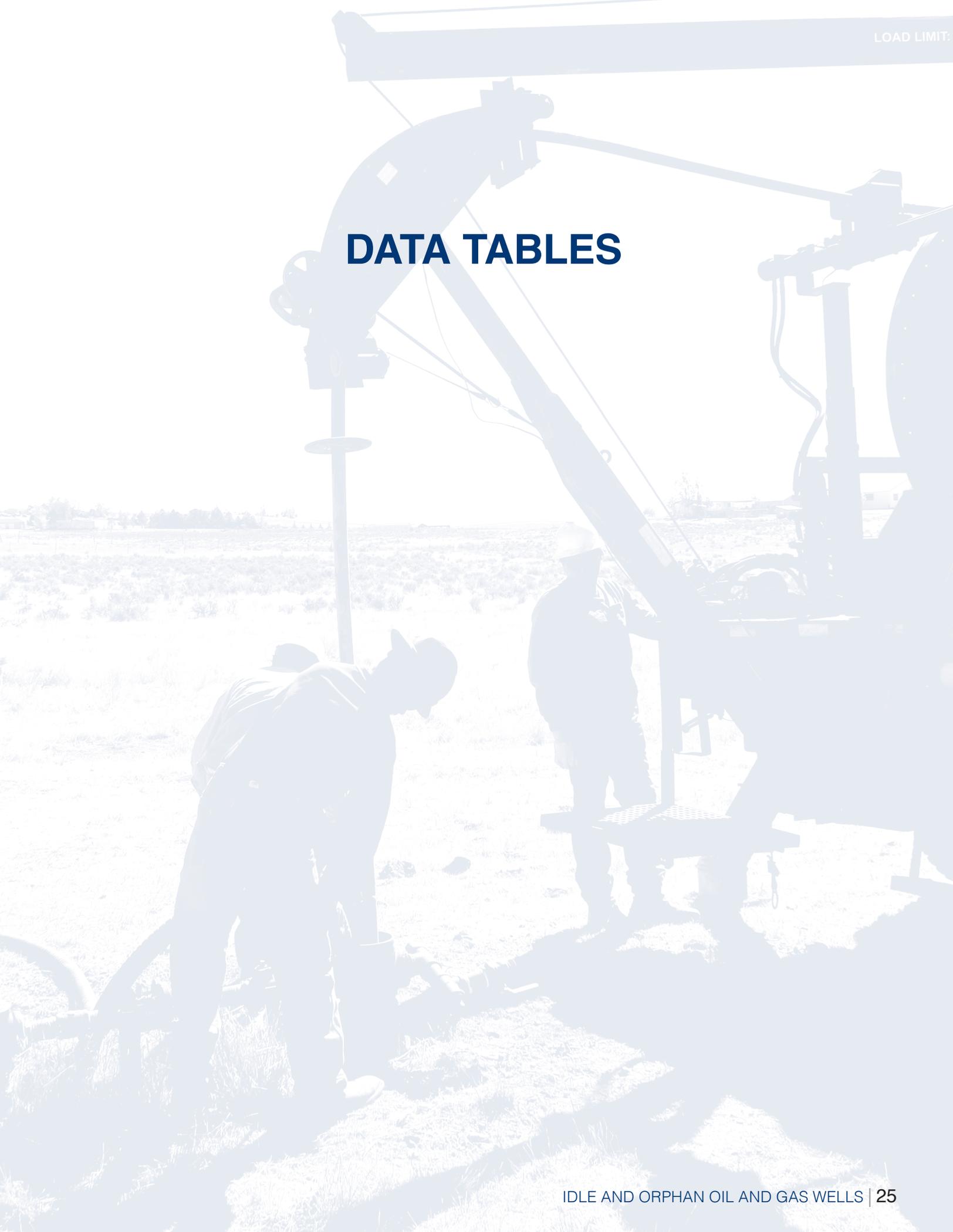


Table 1. Documented Wells Drilled and Not Plugged (2020)*Blank fields indicate that no data was reported or available.**Data as of December 31, 2020.*

State or Province	Oil and gas production	Oil-and-gas-related injection	Oil-and-gas-related monitoring	Gas storage	Other	Total
Alabama	6,754	245	0	14	18	7,031
Alaska	3,583	1,627	26	14	263	5,513
Arizona						
Arkansas	17,489	1,021		11	0	18,521
California	58,493	13,807	3,584	323	0	76,207
Colorado	51,228	697	116	257	0	52,298
Idaho						12
Illinois						44,165
Indiana	5,652	1,136	0	973	90	7,851
Kansas	95,332	18,305	10	883	0	114,530
Kentucky	57,818	2,715		599		61,132
Louisiana						59,093
Maryland						[1]
Michigan	14,576	1,124	0	2,116	2,506	20,322
Mississippi	5,060	1,221	94	163	0	6,538
Missouri	2,707	435	49	65	327	3,583
Montana						14,200
Nebraska	2,098	612	0	0	0	2,710
Nevada	105	15	0	0	0	120
New Mexico	55,620	4,134	115	24	20	59,913
New York	16,080	853	136	850	4,715	22,634
North Dakota	19,574	1,343	8	0	0	20,925
Ohio	61,211	396	0	3,351	0	64,958
Oklahoma	215,312	11,119	0	311	0	226,742
Pennsylvania	130,946	2,328	239	1,415	3	134,931
South Dakota	342	103	0	0	0	445
Tennessee	5,012					5,012
Texas						440,749
Utah	13,865	1,997	15	64	379	16,320
Virginia	8,690	9	0	38	0	8,737
West Virginia						74,596
Wyoming	44,659	4,162	413	49	0	49,283
Totals - States	892,206	69,404	4,805	11,520	8,321	1,619,071
Alberta	221,728	12,727	5,303	244	26,672	266,674
British Columbia	16,056	457	107	6	0	16,626
Northwest Territories	86	2	0	0	0	88
Saskatchewan	80,481	8,619	0	110	90	89,300
Yukon	9	0	0	0	0	9
Totals - Provinces	318,360	21,805	5,410	360	26,762	372,697

[1] No wells have been drilled in Maryland since the late 1990s.

Table 2. Approved Idle Wells (2020)

Blank fields indicate that no data was reported or available.

State or Province	Wells with approval to remain idle				
	Gas	Oil	Injection	Other	Total
Alabama	569	228	89	5	891
Alaska	111	577	287	12	987
Arizona					
Arkansas	295	28	15	0	338
California	1,229	25,518	10,354	419	37,520
Colorado[1]					
Idaho	0	0	1	0	1
Illinois		3,655	395		4,050
Indiana	119	99	39	6	263
Kansas	2,682	5,375	659	75	8,791
Kentucky	1,305	1,463	272	7	3,047
Louisiana	Unknown	Unknown	0	0	23,448
Maryland	0	0	0	0	0
Michigan	557	288	41	245	1,131
Mississippi	707	1,091	357	0	2,155
Missouri	17	114	8	4	143
Montana	1,064	2,218	327	58	3,667
Nebraska	142	288	72	0	502
Nevada	1	54	3	0	58
New Mexico	1,520	2,573	104	0	4,197
New York	48	72	32	6	158
North Dakota					159
Ohio					16
Oklahoma	54	1,049	0	457	1,560
Pennsylvania	544	79	1	71	695
South Dakota	3	4	5	0	12
Tennessee	406	98	0	45	549
Texas	41,849	72,670	8,416	9	122,944
Utah	111	103	128	0	342
Virginia	291			1	292
West Virginia					139
Wyoming	6,005	7,227	0	0	13,232
Totals - States	59,629	124,871	21,605	1,420	231,287
Alberta	29,967	40,160	4,344	21,041	95,512
British Columbia	3,697	982	266	1,605	6,550
Northwest Territories	86	0	2	0	88
Saskatchewan	6,114	28,665	3,103[2]	151	38,033
Yukon					
Totals - Provinces	39,864	69,807	7,715	22,797	140,183

[1] Rules establish requirements for idle wells; however, approval is not required, and the number of idle wells is not tabulated.

[2] Number includes observation wells, relief wells, casing repair re-entry wells, gas vent wells, and water source wells.

Table 3. Documented and Undocumented Orphan Wells (2018-2020)

Blank fields indicate that no data was reported or available.

Data as of December 31, 2018, 2019, and 2020.

State or Province	Documented orphan wells			Estimated undocumented orphan wells
	2018	2019	2020	2020
Alabama	3	3	26	0
Alaska	14[1]	14	14	150+
Arizona				
Arkansas	484	430	418	
California	16	25	2,777	17,986
Colorado	275	268	276	200
Idaho	0	0	0	150 to 170
Illinois	4,253	4,330	4,355	
Indiana	1,028	1,107	1,459	<100
Kansas	5,709	5,653	5,632	
Kentucky	13,266	13,836	14,367	3,000
Louisiana	3,621[1]	3,966	4,260	
Maryland	0	0	0	
Michigan	98	116	154	0
Mississippi	21	6	11	6
Missouri	327	327	327	2,009
Montana	231	232	222	
Nebraska	75	98	103	120
Nevada	6	6	6	0
New Mexico	374	708	3,375[2]	
New York[3]	4,043	7,222	7,073	34,000
North Dakota	0	0	341	0
Ohio	910	959	972	36,342 to 66,400
Oklahoma	1,372	1,075	2,799	105,907
Pennsylvania	8,703	8,709	27,972[4]	100,000 to 560,000
South Dakota	0	40	33	0
Tennessee			446	54
Texas	6,989[5]	6,171	6,514	
Utah	33	47	41	
Virginia	10	10	9	
West Virginia	6,302[6]	6,625	6,309	9,000
Wyoming	3,083	2,906	1,907	0
Totals - States	61,246	64,889	92,198	310,000 to 800,000
Alberta	3,127	3,128	2,983	0
British Columbia	326	357	754	0
Northwest Territories	0	0	0	0
Saskatchewan	609[1]	640	1,277	0
Yukon	1	1	1	0
Totals - Provinces	4,063	4,126	5,015	0

[1] Revised 2018 number for documented orphan wells to correct an error in the number reported in 2019.

[2] Increased number of documented orphan wells to include orphan wells that do not yet have an approved plugging order.

[3] Revised 2018 number upward and reported larger numbers in 2019 and 2020 to include wells that are identified on lease maps or other records as having been drilled but have not yet been found or searched for in the field.

[4] Increased number of documented orphan wells to include various groups of wells identified as abandoned, including some without geographic coordinates.

[5] Revised 2018 number for documented orphan wells to report numbers on a calendar year, rather than a fiscal year, basis.

[6] Revised 2018 number for documented orphan wells to include orphan wells with a known operator that is bankrupt or deceased.

Table 4. Operator Status of Documented Orphan Wells (2020)*Blank fields indicate that no data was reported or available.**Data as of December 31, 2020.*

State or Province	Documented orphan wells		Known operators			
	Operator known	Operator unknown	With 1 well	With 2-10 wells	With 11-100 wells	With >100 wells
Alabama	26	0	1	2	1	0
Alaska	0	14				
Arizona						
Arkansas	418	0	57	25	9	1
California	2,777	0	623	231	35	2
Colorado	247	29	59	12	9	0
Idaho	0	0	0	0	0	0
Illinois						
Indiana	599	860	87	58	14	0
Kansas	5,200	432	409	360	100	4
Kentucky						
Louisiana[1]	4,612	1	717	406	72	5
Maryland	0	0	0	0	0	0
Michigan	152	2	17	6	14	0
Mississippi	11	0	5	3	0	0
Missouri						
Montana	222	0	35	13	5	0
Nebraska						
Nevada	6	0	4	1	0	0
New Mexico	3,375	0	115	188	50	5
New York	3,115	3,958	274	142	48	3
North Dakota	341	0	11	15	8	0
Ohio						
Oklahoma						
Pennsylvania	22,296	5,663	976	843	336	37
South Dakota	33	0	0	0	1	0
Tennessee	446	0	34	45	12	0
Texas	6,514	0	450	454	135	3
Utah	39	2	10	7	1	0
Virginia	9	0	7	1	0	0
West Virginia	1,656	4,653	228	161	20	0
Wyoming	1,907	0	9	14	11	4
Totals - States	54,001	15,614	4,128	2,987	881	64
Alberta	2,983	0	80	48	30	6
British Columbia	752	2	10	16	5	2
Northwest Territories	0	0				
Saskatchewan	1,277	0	29	24	14	2
Yukon	1	0	1	0	0	0
Totals - Provinces	5,013	2	120	88	49	10

[1] Numbers provided as of September 20, 2021.

Table 5. Documented Orphan Wells by Land Ownership (2020)*Blank fields indicate that no data was reported or available.**Data as of December 31, 2020.*

State or Province	Total documented orphan wells	State land	Private land	Federal/ Tribal land
Alabama	26	0	26	0
Alaska	14	9	2	3
Arizona				
Arkansas	418	0	418	0
California	2,777	200	2,394	183
Colorado	276	23	217	36
Idaho	0	0	0	0
Illinois	4,355[1]			
Indiana	1,459	17	1,441	1
Kansas	5,632	0	5,632	0
Kentucky	14,367	6	11,722	2,639
Louisiana	4,260	253	4,007	0
Maryland	0			
Michigan	154	5	147	2
Mississippi	11	0	10	1
Missouri	327	0	327	0
Montana	222	21	201	0
Nebraska	103	10	91	2
Nevada	6	0	0	6
New Mexico	3,375	890	859	1,626
New York	7,073	0	6,970	103
North Dakota	341	10	292	39
Ohio	972			
Oklahoma	2,799	0	2,799	0
Pennsylvania	27,972[2]	897	15,140	2,354
South Dakota	33	29	4	0
Tennessee	446	3	437	6
Texas	6,514	[3]	[3]	~50[4]
Utah	41	6	35	0
Virginia	9	0	9	0
West Virginia	6,309	816	5,429	64
Wyoming	1,907	150	1,757	Unknown
Totals - States	92,198	3,345	60,366	7,115
Alberta	2,983			
British Columbia	754	423	331	0
Northwest Territories	0	0	0	0
Saskatchewan	1,277			65
Yukon	1			
Totals - Provinces	5,015	423	331	65

[1] Land ownership is being determined as of the date of publication; preliminary information indicates all documented orphan wells are on private land.

[2] Geographic coordinates and land ownership are not yet determined for 9,581 of these wells.

[3] There are approximately 6,464 wells on state and private lands, of which 176 are in state waters. The number of these wells on other state lands is not currently available.

[4] These wells are located on federal lands. None are on tribal lands.

Table 6. Total Wells Plugged (2018-2020)*Includes orphan wells.**Data as of December 31, 2018, 2019, and 2020.*

State or Province	2018					2019					2020				
	Oil wells	Natural gas wells	Injection wells	Other wells	Total wells	Oil wells	Natural gas wells	Injection wells	Other wells	Total wells	Oil wells	Natural gas wells	Injection wells	Other wells	Total wells
Alabama	13	124	2	8	147	22	113	6	9	150	36	153	24	7	220
Alaska	45	6	6	0	57	88	13	7	4	112	31	1	10	9	51
Arizona					0										
Arkansas	74	110	13	0	197	62	114	8	0	184	33	166	9	0	208
California	749	64	304	229	1,346	1,046	21	752	108	1,927	1,227	25	850	52	2,154
Colorado					2,251					2,436					1,508
Idaho	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0
Illinois	423	5	54	0	482					553					413
Indiana	56	8	12	22	98	122	24	25	49	220	70	13	24	14	121
Kansas	1,234	409	244	370	2,257	1,328	335	256	384	2,303	1,140	356	266	198	1,960
Kentucky	166	30	18	52	266					319					557
Louisiana	437	305	55	266	1,063	342	362	73	160	937	261	315	67	147	790
Maryland					0					1					0
Michigan	70	145	18	0	233	63	253	3	0	319	43	156	3	0	202
Mississippi	61	19	16	38	134	49	24	18	13	104	29	11	19	13	72
Missouri	7	5	15	37	64	2	0	3	4	9	4	4	2	0	10
Montana	24	42	7	0	73	31	43	8	0	82	25	152	10	8	195
Nebraska	48	0	11	0	59	52	0	8	0	60	55	0	11	0	66
Nevada	1	0	0	0	1	2	0	0	0	2	1	0	0	0	1
New Mexico	480	160	59	0	699	474	259	84	9	826	184	117	21	0	322
New York	89	27	8	24	148	121	51	36	15	223	105	11	38	28	182
North Dakota	130	7	19	0	156	127	6	14	0	147	141	0	34	7	182
Ohio	105	211	2	0	318	106	211	3	0	320	103	207	1	0	311
Oklahoma	545	554	95	1,607	2,801	618	484	120	2,466	3,688	397	323	23	2,289	3,032
Pennsylvania	134	329	8	53	524	141	335	1	66	543	134	262	2	32	430
South Dakota	7	5	0	0	12	8	3	0	0	11	1	27	0	0	28
Tennessee	22	46	0	60	128	29	79	0	66	174	27	65	0	48	140
Texas					7,566					5,046					10,860
Utah	58	82	23	14	177	28	127	15	25	195	45	102	10	78	235
Virginia	0	85	0	0	85	0	98	1	0	99	0	76	0	0	76
West Virginia					171					220					152
Wyoming	203	1,549	81	4	1,837	267	1,435	63	0	1,765	148	1,234	46		1,428
Totals - States	5,181	4,327	1,070	2,784	23,350	5,128	4,390	1,504	3,378	22,981	4,240	3,776	1,470	2,930	25,906
Alberta	1,574	1,969	140	0	3,683	1,643	2,815	220	0	4,678	1,667	3,498	292	45	5,457
British Columbia	51	207	19	95	372	63	393	19	65	540	53	538	14	114	722
Northwest Territories	4	0	0	0	4	1	0	0	0	1	3	0	0	0	3
Saskatchewan	434	981		90[1]	1,505	1,131	816	0	140[1]	2,087	771	1,278	0	124[1]	2,173
Yukon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals - Provinces	2,063	3,157	159	185	5,564	2,838	4,024	239	205	7,306	2,494	5,314	306	283	8,355

[1] Includes injector wells, disposal wells, observation wells, relief wells, casing repair wells, gas vent wells, and water source wells.

Table 7. Orphan Well Plugging and Expenditures (2018-2020)

Blank fields indicate that no data was reported or available.

Data as of December 31, 2018, 2019, and 2020.

State or Province	Orphan wells plugged			Expenditures for plugging (\$=US dollars; C\$=Canadian dollars)			Includes restoration (Yes or No)	Plugged since start of program
	2018	2019	2020	2018	2019	2020		
Alabama	0	0	0	\$0	\$0	\$0	Yes	
Alaska	0	0	0	\$0	\$0	\$0		0
Arizona								
Arkansas	25[1]	1	23	\$227,825	\$56,521	\$420,434	Yes	772
California	29[2]	60	43	\$5,896,686	\$9,981,893	\$14,072,753	Yes	210
Colorado	16[3]	10	61	\$644,880	\$672,992	\$1,990,278	No	
Idaho	0	0	0	\$0	\$0	\$0		0
Illinois	9	20	23	\$447,000	\$721,537	\$750,914	Yes	404+
Indiana	5	15	7	\$45,399	\$187,960	\$90,432	Yes	~800
Kansas	168	137	161	\$773,762	\$755,943	\$556,246	Yes	10,718
Kentucky	9	66	298	\$33,000	\$298,000	\$1,291,000	Yes	4,036
Louisiana	219	1	135	\$6,400,000	\$4,638,918	\$5,939,013	Yes	3,450
Maryland	0	0	0	\$0	\$0	\$0		0
Michigan	6	5	2	\$585,756	\$795,199	\$678,862	Yes	386
Mississippi	5	11	0	\$168,000	\$497,635	\$0	Yes	457
Missouri	0	0	0	\$0	\$0	\$0		
Montana	11	1	2	\$387,000	\$416,625	\$264,667	Yes	481
Nebraska	16	21	13	\$170,000	\$320,000	\$270,000	Yes	
Nevada	0	0	0	\$0	\$0	\$0		0
New Mexico	60	36	49	\$1,356,099	\$1,022,249	\$2,154,826	Yes	234[4]
New York	45	95	68	\$1,400,000	\$4,190,000	\$2,850,000	Yes	487
North Dakota	3	0	282	\$224,334	\$0	\$37,797,531	Yes	306
Ohio	51	92	150	\$3,000,000	\$8,867,580	\$14,035,390	Yes	2,347
Oklahoma	58	127	112	\$1,293,466	\$1,640,774	\$1,495,135	No	4,142
Pennsylvania	6	9	18	\$474,111	\$1,446,580	\$1,499,741	Yes	3,329
South Dakota	0	0	7	\$0	\$0	\$88,107	Yes	7
Tennessee	33	77	66	Unknown	\$213,505	\$131,000	Yes	~650
Texas	1,332	1,779	1,473	\$24,502,884	\$36,381,395	\$31,126,662	No	40,068
Utah	1	1	2	\$88,244	\$65,546	\$102,704	Yes	117
Virginia	0[5]	0	1	\$0	\$0	\$111,854	Yes	14
West Virginia	0	2	1	\$0	\$236,804	\$185,829	Yes	472
Wyoming	333[1]	529	1,066	\$2,200,000	\$3,165,531	\$5,813,669	Yes	4,475 +
Totals - States	2,440	3,271	4,063	\$50,318,446	\$76,573,187	\$123,717,047		~78,360
Alberta	799	982	1,922	C\$45,800,000	C\$46,200,000	C\$63,700,000	No	5,100
British Columbia	84	312	510	C\$8,500,000	C\$7,000,000	C\$18,500,000	No	510
Northwest Territories	0	0	0	C\$0	C\$0	C\$0		0
Saskatchewan	92	144	85	C\$2,248,411	C\$8,000,000	C\$3,000,000	No	670
Yukon	0	0	0	C\$0	C\$0	C\$0		0
Totals - Provinces	975	1,438	2,517	C\$56,548,411	C\$61,200,000	C\$85,200,000		6,280

[1] Revised 2018 orphan wells plugged to correct an error in the number reported in 2019.

[2] Revised 2018 orphan wells plugged to include wells plugged in state waters of the coastal zone.

[3] Revised 2018 orphan wells plugged to account for an orphan well that an operator plugged at no cost to the state.

[4] Number plugged since 2015.

[5] Revised 2018 orphan wells plugged because the numbers reported in 2019 were the total orphan wells plugged through 2018.

Table 8. Orphan Well Restoration and Expenditures (2018-2020)

Blank fields indicate that no data was reported or available.

Data as of December 31, 2018, 2019, and 2020.

State or Province	Sites restored separately from plugging			Expenditures for restoration, if not included in plugging expenditures (\$=US dollars; C\$=Canadian dollars)			Plugged orphan wells that need restoration		
	2018	2019	2020	2018	2019	2020	2018	2019	2020
Alabama	0	0	0	\$0	\$0	\$0	0	0	0
Alaska	0	0	0	\$0	\$0	\$0	1	1	1
Arizona									
Arkansas	0	0	1	\$0	\$0	\$8,641	0	0	0
California	0	0	0	\$0	\$0	\$0	0	0	0
Colorado	10	16	12	\$189,895	\$888,089	\$2,750,162	373	422	454
Idaho	0	0	0	\$0	\$0	\$0	0	0	0
Illinois	0	0	0	\$0	\$0	\$0			
Indiana	0	0	1	\$0	\$0	\$19,230	0	0	10
Kansas	37			\$26,730					
Kentucky	0	0	0	\$0	\$0	\$0	0	0	0
Louisiana	0	0	0	\$0	\$0	\$0	Unknown	Unknown	Unknown
Maryland	0	0	0	\$0	\$0	\$0	0	0	0
Michigan	6	0	0	\$83,697	\$0	\$0	0	0	1
Mississippi	0	0	8	\$0	\$0	\$43,037			
Missouri	0	0	0	\$0	\$0	\$0	0	0	0
Montana	0	0	0	\$0	\$0	\$0	11	1	2
Nebraska	7	8	5	\$98,000	\$18,000	\$6,000			
Nevada	0	0	0	\$0	\$0	\$0	0	0	0
New Mexico	0	0	0	\$0	\$0	\$0	172	197	227
New York	0	0	0	\$0	\$0	\$0	0	0	0
North Dakota	0	6	186[1]	\$0	\$203,055	\$28,870,850	0	0	156
Ohio	0	0	0	\$0	\$0	\$0			
Oklahoma	608	712	539	\$4,300,000	\$6,441,406	\$5,558,005			
Pennsylvania	0	0	0	\$0	\$0	\$0	0	0	0
South Dakota	0	0	0	\$0	\$0	\$0	0	0	0
Tennessee	0	0	0	\$0	\$0	\$0	0	0	0
Texas	132	257	125	\$761,020	\$2,520,379	\$2,273,584			
Utah	1	1	2	\$16,772	\$13,452	\$24,462	5	5	5
Virginia	0	0	0	\$0	\$0	\$0	0	0	0
West Virginia	4	0	0	\$79,607	\$0	\$0	0	0	0
Wyoming	0	0	0	\$0	\$0	\$0			
Totals - States	805	1,000	879	\$5,555,721	\$10,084,381	\$39,553,971	562	626	856
Alberta	85	146	267	C\$22,900,000	C\$26,900,000	C\$47,800,000	2,151	3,319	4,889
British Columbia	15	31	61	C\$500,000	C\$6,500,000	C\$12,500,000	59	256	396
Northwest Territories	0	0	0	C\$0	C\$0	C\$0	0	0	0
Saskatchewan	36	33	111	C\$2,000,000	C\$2,200,000	C\$3,500,000	369	481	577
Yukon	0	0	0	C\$0	C\$0	C\$0			
Totals - Provinces	136	210	439	C\$25,400,000	C\$35,600,000	C\$63,800,000	2,579	4,056	5,862

[1] These sites consisted of 184 wells, one treating plant, and one pipeline.

Table 9. Idle Well Requirements

Blank fields indicate that no data was reported or available.

+ indicates provisions for extension of time.

State or Province	Idle period before approval needed			Idle period with approval		
	Gas	Oil	Injection	Gas	Oil	Injection
Alabama	6 months	6 months	6 months	1 year +	1 year +	1 year +
Alaska [1]	No approval required	No approval required	No approval required	No approval required	No approval required	No approval required
Arizona	60 days	60 days	60 days	5 years +	5 years +	5 years+
Arkansas	2 years	2 years	1-2 years	3 years+	3 years+	3 years+
California [2]	No approval required	No approval required	No approval required	No approval required	No approval required	No approval required
Colorado [3]	No approval required	No approval required	No approval required	No approval required	No approval required	No approval required
Idaho	2 years	2 years		3 years +	3 years +	
Illinois	2 years	2 years	2 years	2 years +	2 years +	2 years +
Indiana	60 days	60 days	60 days	5 years +	5 years +	5 years +
Kansas	90 days	90 days	90 days	1 years +	1 years +	1 years +
Kentucky	1 year	1 year	1 year	2 years +	2 years +	2 years +
Louisiana	5 years +	5 years +	No approval required	Indefinite	Indefinite	Indefinite
Maryland	No approval required	No approval required	No approval required	No approval required	No approval required	No approval required
Michigan	1 year	1 year	1 year	1 - 5 years +	1 - 5 years +	1 - 5 years +
Mississippi	1 year	1 year	Indefinite	Indefinite	Indefinite	Indefinite
Missouri	90 days	90 days	90 days	10 years	10 years	10 years
Montana	1 year	1 year	1 year	Unspecified	Unspecified	Unspecified
Nebraska	1 year	1 year	1 year	1 years +	1 years +	1 years +
Nevada	1 year	1 year	1 year	1 years +	1 years +	1 years +
New Mexico	15 months	15 months	1 year	5 years +	5 years +	1 years +
New York	1 year	1 year	1 year	1 years +	1 years +	1 years +
North Dakota	1 year	1 year	1 year	7 years +	7 years +	7 years +
Ohio	2 years	2 years	2 years	1 years +	1 years +	1 years +
Oklahoma	Indefinite	1 year	Indefinite	Indefinite	1 - 5 years +	Indefinite
Pennsylvania	1 year	1 year	1 year	5 years +	5 years +	5 years +
South Dakota	6 months	6 months	6 months	5 years +	5 years +	5 years +
Tennessee	1 year	1 year	1 year	5 years	5 years	5 years
Texas	1 year	1 year	1 year	Unspecified	Unspecified	Unspecified
Utah	1 year	1 year	1 year	5 years +	5 years +	5 years +
Virginia	3 years	3 years	3 years	Unspecified	Unspecified	Unspecified
West Virginia	1 year	1 year	1 year	5 years	5 years	5 years
Wyoming	2 years	2 years	2 years	Indefinite	Indefinite	Indefinite
Alberta	18 - 24 months	18 - 24 months	18 - 24 months	Indefinite	Indefinite	Indefinite
British Columbia	1 year	1 year	1 year	1 - 15 years	1 - 15 years	1 - 15 years
Northwest Territories	2 years	2 years	2 years	6 years	6 years	6 years
Saskatchewan	When unused	When unused	When unused	Unspecified	Unspecified	Unspecified
Yukon	1 year	1 year	1 year	3 years +	3 years +	3 years +

[1] The operator must report annually on the mechanical condition of an idle well and its potential future utility.

[2] Idle wells are subject to fees and testing requirements that are based upon the number of years a well has been idle.

[3] Rules specify requirements for idle wells, including testing requirements.

Table 10. Funding Sources for Plugging Orphan Wells

State or Province	Annual fee	Idle well fee	Permit fee	Civil penalty	Settlement	Appropriations	Forfeited bonds	Salvage	Excise tax	Production assessment	Other
Alabama			•				•				
Alaska											
Arizona											
Arkansas	•						•	•		•	
California	•	•		•		•				•	•
Colorado				•	•	•	•	•	•	•	
Idaho			•	•	•		•				
Illinois	•										
Indiana	•			•			•	•			
Kansas			•				•	•		•	•
Kentucky							•				•
Louisiana		•									•
Maryland											
Michigan				•		•	•			•	
Mississippi		•		•		•	•	•			
Missouri							•				
Montana							•				•
Nebraska		•					•	•			
Nevada											
New Mexico					•		•	•		•	•
New York			•		•	•	•				
North Dakota			•	•	•	•	•	•		•	
Ohio	•	•	•	•	•	•	•	•		•	•
Oklahoma									•	•	
Pennsylvania			•								
South Dakota							•				
Tennessee		•					•				•
Texas		•	•				•	•		•	
Utah									•		
Virginia			•								
West Virginia			•				•			•	•
Wyoming							•	•	•		
Totals - States	5	7	10	8	6	7	21	11	4	11	9
Alberta	•										
British Columbia	•						•	•			•
Northwest Territories											
Saskatchewan	•		•				•	•			•
Yukon						•	•				
Totals - Provinces	3		1			1	3	2			2

Table 11. Financial Assurance

State or Province	Financial assurance amounts				Financial assurance accepted						
	Single well		Blanket		Cash deposit	Certificate of deposit	Financial statement	Letter of credit	Surety or performance bond	Security interest	Other
	Minimum	Maximum	Minimum	Maximum							
Alabama	\$5,000	\$500,000	\$100,000	\$7,500,000				•	•		
Alaska[1]		\$400,000	\$400,000	\$30,000,000	•	•		•	•		
Arizona	\$10,000	\$20,000	\$25,000	\$250,000	•	•			•		
Arkansas	\$3,000	\$50,000[2]	\$25,000	\$100,000[2]	•	•		•	•		
California	\$25,000	\$40,000	\$200,000	\$3,000,000		•			•		•[8]
Colorado	\$10,000	\$20,000	\$60,000	\$100,000	•	•	•	•	•	•	
Idaho	\$10,000+\$1/ft.	\$10,000+\$8/ft.	\$50,000	\$150,000					•		
Illinois	\$1,500	\$3,000	\$25,000	\$100,000		•		•	•		
Indiana		\$2,500		\$45,000	•	•			•		
Kansas	\$.75/ft.	\$30,000	\$7,500	\$45,000	•		•	•	•		•[9]
Kentucky	\$2/ft.	\$40,000[2]	\$20,000	\$1,500,000[2]	•	•		•	•		
Louisiana	\$2/ft.	\$12/ft.	\$50,000	\$5,000,000		•		•	•		
Maryland		\$100,000		\$500,000	•	•		•	•		
Michigan	\$20,000	\$60,000	\$100,000	\$250,000	•	•	•	•	•		
Mississippi	\$20,000	\$60,000		\$100,000	•			•	•		
Missouri	\$1,100	\$5,500+\$2/ ft.	\$22,000	\$25,000[3]		•		•	•		
Montana	\$1,500	\$10,000		\$50,000		•			•		
Nebraska		\$10,000		\$100,000		•			•		
Nevada		\$10,000[2]		\$50,000[2]	•	•			•		
New Mexico		\$25,000+\$2/ft.	\$50,000	\$250,000	•			•	•	•	
New York	\$2,500	Actual cost	\$25,000	\$2,000,000	•	•		•	•		
North Dakota	\$20,000	\$100,000		\$100,000[4]		•			•		
Ohio		\$5,000		\$15,000	•	•	•	•	•		
Oklahoma	\$25,000[5]	\$100,000	\$25,000	\$50,000	•	•	•	•	•		
Pennsylvania[6]	\$2,500	\$10,000		\$25,000	•	•			•		
South Dakota		\$50,000		\$100,000		•		•	•		
Tennessee	\$2,000	\$3,000+\$1/ft.	\$20,000	\$30,000	•	•		•	•		
Texas		\$2/ft	\$25,000	\$250,000	•			•	•		
Utah	\$1,500	\$60,000	\$15,000	\$60,000	•	•		•	•		
Virginia		\$10,000+\$2,000/acre	\$25,000	\$200,000	•	•			•		
West Virginia	\$5,000	\$50,000	\$50,000	\$250,000	•	•		•	•		
Wyoming		\$10/ft		\$100,000[2]	•	•		•	•		
Totals - States					22	26	5	22	32	2	2
Alberta		None		Case-by-case	•			•			
British Columbia		Case-by-case		Case-by-case	•			•			
Northwest Territories[7]			C\$10,000,000	C\$25,000,000				•			•[10]
Saskatchewan	C\$10,200	C\$76,100		None	•			•			
Yukon		Case-by-case		None	•			•			
Totals - Provinces					4			5			1

[1] Amounts may be increased or decreased on operator request or by agency action.
 [2] Higher amounts may be required under certain circumstances.
 [3] Wells deeper than 1,500 feet must be bonded individually by a single well bond.
 [4] Covers six or fewer wells.
 [5] May substitute actual cost to P&A.
 [6] Wells drilled before 1985 do not require bonds.
 [7] Information here concerns financial assurance required for damages associated with spills or debris. No information provided on financial assurance required for plugging and restoration.
 [8] The other types include a share account, note, savings account, share certificate, or investment certificate. The state also has new authorities to place liens on real property.
 [9] Other financial assurance approved by the Commission.
 [10] Other forms of financial assurance are considered on a case-by-case basis.

Table 12. Plugging Funds

Blank fields indicate that no data was reported or available.

An * indicates no plugging fund.

State or Province	Year established	Last modified	Prioritization for plugging?	Emergency use for non-orphan wells?	Annual spending target?	Covers restoration?	Salvage recovered?
Alabama	1984[1]		Y	Y	N	Y	Y
Alaska*							
Arizona*							
Arkansas	2005		Y	Y	Y	Y	Y
California	1990	2017	Y	N	Y	Y	Y
Colorado	1990	2019	Y	Y	Y	Y	Y
Idaho*							
Illinois	1939		Y	Y	Y	Y	Y
Indiana	Unknown		Y	Y	Y	Y	Y
Kansas	1996	2021	Y	Y	N	Y	Y
Kentucky	1990	2019	Y	N	N	Y	Y
Louisiana	1993	2018	Y	Y	Y	Y	Y
Maryland*							
Michigan	1994		Y	Y	Y	Y	Y
Mississippi	1948	2019	Y	N	N	Y	N
Missouri	1983			Y	N	N	N
Montana	1989	2015	Y	Y	N	Y	N
Nebraska	2014		Y	Y	N	Y	Y
Nevada*			Y				
New Mexico	1977	2010	Y	Y	N	Y	Y
New York	1982	2021	Y	N	N	Y	N
North Dakota	1983	2019	Y	Y	Y	Y	Y
Ohio	1977	2018	Y	Y	Y	Y	Y
Oklahoma[2]	1990	2016	Y	Y	Y	N	Y
Pennsylvania	1985	2012	Y	N	N	Y	Y
South Dakota*[3]							N
Tennessee	1987	2019	Y	N	N	Y	N
Texas	1984	2013	Y	Y	N	Y	Y
Utah	1990	1992	Y		Y	Y	Y
Virginia	1991	2017	Y	N	N	Y	N
West Virginia	1977	2005	Y	Y	Y	Y	N
Wyoming*[3]			Y	Y	Y	Y	Y
Alberta	2002		Y	N	Y	Y	Y
British Columbia	2006	2019	Y	N	Y	Y	N
Northwest Territories *							
Saskatchewan	2007		Y	Y	Y	Y	Y
Yukon*[3]			N				

[1] For coalbed methane wells only.

[2] Has a separate restoration fund.

[3] Has access to other funding sources for plugging and restoration.

Table 13a. Updated Data on Documented Orphan Wells*Data as of November 15, 2021, unless otherwise indicated.**See next page for additional explanations.*

State	Total Documented Orphan Wells	Documented Orphan Wells on State and Private Lands	Date of Reported Numbers If other than November 15, 2021
Alabama	89	89	
Alaska	14	11	
Arizona	391	245	12/17/2021
Arkansas	423	423	
California	5,151	5,151	
Colorado	495	451	12/10/2021
Idaho	0	0	
Illinois	4,415[1]	3,663	12/10/2021
Indiana	1,442	1,441	
Kansas	5,486	5,486	
Kentucky	14,489	14,489	11/30/2021
Louisiana	4,601	4,601	11/22/2021
Maryland			
Michigan	442	441	
Mississippi	15	14	11/24/2021
Missouri	330	330	
Montana	279	279	11/29/2021
Nebraska	471	471	
Nevada	6	-	
New Mexico	3,375	1,749	11/17/2021
New York	7,040	6,937	
North Dakota	232	186	11/30/2021
Ohio	20,557	19,662	
Oklahoma	17,865	17,865	11/17/2021
Pennsylvania	27,991	16,056[2]	
South Dakota	19	19	
Tennessee	470	465	11/29/2021
Texas	7,436	7,396	10/31/2021
Utah	35	35	
Virginia	9	9	
West Virginia	6,309	6,245	
Wyoming	1,350	1,350	
Totals - States	131,227	115,314	

*[1] Illinois has geographic coordinates for 3,663 wells. The locations of the remainder are being verified.**[2] Pennsylvania does not yet have geographic coordinates for 9,581 of the total documented orphan wells.*

Table 13b. Explanations for Updated Data on Documented Orphan Wells

Explanation requested if the orphan well count differs by 10% or more from the count for 2020 in Table 3:	
Alabama	Since December 31, 2020, the state plugged nine abandoned wells, one operator in bankruptcy expressed intent to abandon 61 wells, another operator with seven inactive wells has been unresponsive, and another operator informed the state he does not have funds to plug four wells.
Arizona	In 2021, the state conducted a review of well records on historic wells. The wells reflected here were found to be lacking reports of plugging or abandonment.
California	The state previously considered only narrow evidence to designate a well as a documented orphan well. For this report, the state undertook additional review of well inventories and considered all evidence of wells that are eligible for state abandonment.
Colorado	No explanation provided.
Indiana	The state added a category of wells that should have been included as documented orphan wells originally. The category is “Revoked Injector Not Present at Surface and Field Verified.” The wells in this category are all Class II wells that were removed from the injector list. The other reason for growth was the addition of old Trenton wells, which have been located and marked as possibly in personal use although no permitting or registration has taken place since they were drilled in the late 1800s or early 1900s. Inspection records in the database show these wells do still exist at surface and are hooked up like gas wells, but they are unpermitted, so they fall under the orphan well category.
Kentucky	The 8.5% increase in Kentucky’s orphan well count comes through a continued focus by field inspectors on searching out, confirming the location of, and determining the status of idle and abandoned wells within their assigned counties.
Michigan	In 2021, two large companies with a total of 284 wells and two smaller companies with a total of 17 wells became insolvent. Their wells were added to the state’s orphan well list.
Montana	No explanation provided.
Nebraska	The state added wells that have been shut in for more than 10 years with no plan to recomplete or produce.
North Dakota	The reduction in wells reported between December 31, 2020, and November 30, 2021, is a result of the state’s ongoing plugging and reclamation work.
Ohio	The state’s previously reported orphan well count consisted of wells that were fully evaluated in accordance with all statutory requirements for the well to be plugged under the state’s orphan well program. In accordance with the definition of “documented orphan well” on the form provided by IOGCC, Ohio updated its numbers to include wells meeting the following criteria: the well has a drilling report, completion report, inspection report, or other record establishing the existence of the well; the state does not have a plugging report for the well; and the state does not have an owner of record for the well.
Oklahoma	The state increased the number of personnel working on the data clean-up project and made documentation of orphan wells a priority for field inspectors. This effort led to an increase in the number of documented orphan wells since December 31, 2020.
South Dakota	The state plugged 14 more orphan wells in 2021.
Texas	The state attributes the increase in orphan wells to the unprecedented volatility experienced by the energy industry in the last two years.
Utah	In October 2021, the state commenced a project to plug 15 wells. Six of those wells were plugged as of November 15, 2021.
Wyoming	As of November 15, 2021, the state plugged 652 wells in calendar year 2021 and added a few more orphan wells to the list.

STATE AND PROVINCIAL SUMMARIES

ALABAMA

Regulatory Agency

State Oil and Gas Board of Alabama

PO Box 869999

Tuscaloosa, AL 35486-6999

ogb.state.al.us

Statutory or Regulatory Authority

Onshore conventional and injection/disposal wells:

Rule 400-1-4-.14 and 400-1-4-.17

Offshore wells: Rule 400-2-4-.11 and 400-2-4-.14

Coalbed methane: Rule 400-3-4-.14 and 400-3-4-.17

Substantially Different Definitions

Idle well: Alabama classifies idle wells as either “shut-in” (those wells capable of producing but currently shut-in until connected to a gathering system, pipeline or processing facility, or for some other reason) or “temporary abandoned” (those wells currently not capable of producing but still having future utility).

Orphan well: Alabama does not statutorily define an orphan well per se but addresses abandoned wells.

Site restoration: Site restoration or restoration of location includes: the plugging and abandonment of the oil and gas well; the removal of all material, debris, equipment, wastes and other material, including contaminated soil, and disposal in accordance with permit(s) or regulation(s); stabilization of the site; and plugging and abandonment of water supply wells unless utilized by the landowner.

Idle Wells

General requirement(s): Demonstration of future utility and mechanical integrity.

Application fee(s): None.

Financial assurance requirement(s): A bond is required. The amount of the bond varies based on depth, location, and risk.

Mechanical integrity requirement(s): A well must demonstrate mechanical integrity of the casing. A MIT may be required to verify.

Surface equipment requirement(s): The well location must be maintained in accordance with all other rules and regulations.

Other requirement(s): Additional safeguards and requirements may be imposed on the operator by the Supervisor or Board as deemed necessary.

Provisions for exemptions or exceptions: Operators may petition the Board for approval of exceptions after notice and hearing.

Orphan wells

Actions to identify and address orphan wells:

Alabama takes a proactive approach to identify and address inactive or idle wells, so this issue will not occur.

Alabama conducts regular ongoing field inspections and regulatory operations in the office (i.e., review of weekly activity reports, monthly production database queries, and annual audits of each operator’s wells) to determine whether or not a well is inactive. Staff in the field and office work together to identify inactive wells and communicate with operators to get such wells plugged. Our rules and regulations limit how long an operator may allow a well to remain inactive. If an operator is not compliant, board action can be taken to order a well plugged and the site restored.

Process for prioritizing orphan wells for plugging: Alabama does not have a formal process to prioritize orphan (aka: abandoned) wells for plugging, since historically it has not been needed due to the low number of such wells. However, the safety of the public and ground water are our highest concerns. Therefore, highest priority is given to any well that poses a risk to either the public or ground water. Such risk factors increase, for example, with increasing levels of H₂S or CO₂ gas produced. They also increase as the depth and age of a well increases; and when there is more equipment on the well site.

Secondly, wells are prioritized according to the amount of bond money—if available—to plug the well and restore the site.

ALASKA

Regulatory Agency

Alaska Oil and Gas Conservation Commission

333 West Seventh Avenue, Suite 100
Anchorage, AK 99501-3935
commerce.alaska.gov

Statutory or Regulatory Authority

Citation: Regulation 20 AAC 25.110 and 20 AAC 25.115

Last update: 2/10/2018 for .110 and 11/7/1999 for .115

Substantially Different Definitions

Idle well: AOGCC refers to shut-in wells as wells that have had no production/injection activity during the full previous calendar year.

Orphan well: Alaska does not have a formal definition of “orphan well.” The AOGCC uses the informal definition for “orphan well” as a well that has not been properly plugged and abandoned and an operator responsible for the well cannot be determined/found.

Site restoration: The AOGCC uses the term “location clearance,” which has much the same definition as “site restoration.” “Location clearance” requirements can be found in 20 AAC 25.170 and 172 for onshore and offshore locations respectively.

Idle Wells

General requirement(s): Must report on mechanical condition of the well, when it last produced/injected, and possible future utility by April 1st each year.

The AOGCC requires approval to suspend a well (set a downhole plug that makes the well incapable of flowing).

Suspended wells are subject to inspection requirements every five years and must be reauthorized every 10 years to keep a well in suspension status.

Application fee(s): None.

Financial assurance requirement(s): None beyond normal bonding requirements.

Provisions for exemptions or exceptions: None.

Any well that is not suspended or plugged and abandoned is subject to the AOGCC’s shut-in well annual reporting requirements as stated above.

Orphan wells

Actions to identify and address orphan wells: Continued research.

Process for prioritizing orphan wells for plugging: None.

ARKANSAS

Regulatory Agency

Oil and Gas Commission

5301 Northshore Drive North
Little Rock, AR 72118
aogc.state.ar.us

Statutory or Regulatory Authority

Citation: AOGC General Rules B-7, H-2 and H-3

Last update: November 19, 2018, June 03, 2019, and June 03, 2019, respectively

Substantially Different Definitions

Idle well: Arkansas utilizes the term “temporarily abandoned” for wells that require approval to remain idle after a set time.

Orphan well: A well where the operator/permittee is unknown or cannot be located and the well is not covered by financial assurance of any type as defined by AOGC rules; or the operator/permittee has not paid the annual Abandoned and Orphaned Well Plugging Program fee on the well.

Site restoration: Arkansas also includes the following to this document definition: “clean-up of any spills and remediation of any conditions endangering public health and safety, or causing contamination of water or the surface, or creating a fire hazard.”

Idle Wells

Director’s Approval (by Rule): Well operator does not have any outstanding Notices of Violations.

Dry natural gas well - Operator must provide well specific financial assurance in the amount of \$35,000 per well or \$15,000 per well for any liquid hydrocarbon production well is submitted for each well. The financial assurance shall be in a prescribed form and shall remain valid until the well is put back into sustained production, plugged or transferred.

Useable ground waters must be protected (bridge plug, or packer, at least 150 feet below the base of the lowest usable groundwater in the area; casing inspection log confirming mechanical integrity; or witnessed initial and annual fluid level test confirming static fluid level is at least 150 feet below the base of the lowest usable groundwater in the area).

No transfer of the well without first obtaining approval of the Commission at a subsequent hearing.

Application fee(s): Director’s Approval (by Rule) – none. Full Commission Approval (after notice and hearing) - \$500 filing fee per well for hearing docket fee.

Financial assurance requirement(s): If not previously submitted, Well Operator provides well specific financial assurance in the amount of \$35,000 per well for any dry natural gas production well, or \$15,000 per well for any liquid hydrocarbon production well. The financial assurance shall be in a form as prescribed by General Rule B-2 and shall remain valid until the well is put back into sustained production, plugged or transferred.

Mechanical integrity requirement(s): Not required.

Surface equipment requirement(s): Well must be secured with a suitable wellhead with no leakage of any substance at the surface.

Well site must be maintained in accordance with rules. Proper well identification must be maintained.

Provisions for exemptions or exceptions: Wells in an approved waterflood/enhanced oil recovery unit are exempt from the three year time limit as long as the unit remains active.

Wells which produce liquid hydrocarbons that are located on actively producing leases are exempt.

Additionally, the Director reserves right to refer requests for temporarily abandoned status to the full Commission for approval.

Orphan wells

Actions to identify and address orphan wells: Routine examination of Commission records and follow-up with field inspections.

Process for prioritizing orphan wells for plugging: Leaking wells and those where the well site creates an imminent danger to the health or safety of the public are prioritized first.

CALIFORNIA

Regulatory Agency

California Geologic Energy Management Division (CalGEM)

715 P Street, MS 1803
Sacramento, CA 95814
conservation.ca.gov/calgem

Statutory or Regulatory Authority

Citation: Public Resources Code sections 3206, 3206.1, 3206.3, 3206.5, 3237, 3250, 3251, 3251.5 and 3258. California Code of Regulations, title 14, sections 1760, 1772-1772.4, and 1772.6-1772.7

Last update: Public Resources Code section 3206 was revised in 2018. Public Resources Code section 3206.1 was revised in 2017. California Code of Regulations, title 14, sections 1760, 1772-1772.4, and 1772.6-1772.7 became effective April 1, 2019

Substantially Different Definitions

Idle well: California defines an idle well as any well that for 24 consecutive months has not either produced oil or natural gas; produced water to be used in production stimulation; been used for enhanced oil recovery, reservoir pressure management, injection, or as an observation well.”

Long-term idle well: A well that has met the definition of idle well for eight years or more is classified as a long-term idle well.

Orphan well: California utilizes several terms to describe orphan wells. “Deserted” wells are wells for which a final plugging and abandonment order has been issued, but a determination of financial resources held by a current or prior operators has not yet been completed. “Orphan wells” are wells that have no responsible party, leaving the state to plug and abandon them. California statute differentiates between two types of orphan wells: idle-deserted wells and hazardous wells. An “idle- deserted well” is defined as a deserted well for which there is no operator responsible for its plugging and abandonment. A “hazardous well” is defined as an oil and gas well determined by the Supervisor to be a potential danger to life, health, or natural resources and for which there is no operator determined by the Supervisor to be responsible for its plugging and abandonment.

Site restoration: California does not define site restoration, although California regulations require operators to restore the well site and the lease.

Idle Wells

General requirements: Under California rules, when a well is idle for three years, annual idle well fees start being assessed on the well at rates that increase the longer the well remains idle. A well that is idle well for 10 years or more is classified as a long-term idle well. Operators may file a management plan for long-term idle wells in lieu of filing the annual idle well. This plan requires operators to reactivate or plug long-term idle wells at a prescribed rate. Failure to file the idle well fee or comply with the plan is conclusive evidence of desertion permitting the supervisor to order the well plugged and abandoned.

Additionally, a well is deemed deserted if it has been idle for 25 years or more and either does not have a management plan or is not covered by an indemnity bond. If declared deserted, the well can be ordered plugged and abandoned.

Financial assurance requirement(s): No additional financial assurance is required for idle wells.

Mechanical integrity requirement(s): Within two years of a well becoming an idle well, fluid level and casing pressure tests are required. Fluid levels are repeated every 24 months and casing pressure tests are repeated every 24 to 96 months, depending on the test pressure. Within eight years of the well becoming an idle well, the first clean out tag demonstrating that the well can be plugged and abandoned to current standards is required. A clean out tag is then required every 48 months. Within 15 years of a well becoming idle, the operator must submit an engineering analysis demonstrating that the well is viable to return to operation in the future.

Other requirement(s): Operators are required to submit an annual inventory and evaluation of their idle wells to CalGEM by January 31, 2021, or within one year of becoming the operator or whichever comes first. The evaluation must include identification of surface obstacles, mechanical integrity, penetration of USDWs, tubing and casing pressures,

whether the well is in a specified sensitive area, and known downhole issues.

Provisions for exemptions or exceptions: Idle well MIT requirements are waived for wells that are subject to an approved Testing Waiver Plan—a schedule for plugging and abandoning idle wells that extends for up to eight years.

Orphan wells

Actions to identify and address orphan wells:

CalGEM has identified the population of “potentially deserted” wells—wells that have not yet been determined to be “deserted,” but for which other evidence suggests the wells likely have no responsible operator. This evidence includes failure to pay idle well fees, the operational history of the well, and lack of response from the operator. CalGEM anticipates that many wells will likely be found to have no legally responsible current or prior operator with financial resources sufficient to cover the costs of plugging and abandonment. CalGEM has in previous reports limited its evidence of desertion to nonpayment of idle well fees for three consecutive years. In this report, CalGEM also considered other relevant factors.

Operators are required to file indemnity bonds to support the cost of plugging a well should it be deserted. However, the minimum bond amounts required by statute are not generally sufficient and CalGEM is working to implement new statutory authority to revise its bonding program to ensure funds are sufficient to cover the costs of plugging and facility restoration. CalGEM has been developing cost estimates and consulting with State Lands Commission staff and offshore operators on this issue.

Recent legislation authorizes CalGEM to require operators to submit a report that demonstrates the operator’s liability to plug and abandon all wells and to decommission all attendant production facilities, including site remediation. This reporting requirement will inform the financial security levels. Informal rulemaking efforts are underway.

CalGEM is working with key stakeholders to develop a prioritization plan to analyze and prioritize wells and facilities for state abandonment and de-

commissioning.

Process for prioritizing orphan wells for plugging: CalGEM has developed a well screening methodology to prioritize wells for state abandonment. This methodology consists of two phases. A screening tool is used to quantify the well surface and downhole risk, followed by a secondary screening that accounts for feedback from local jurisdictions (cities and counties), accessibility, and future development plans.

COLORADO

Regulatory Agency

Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801
Denver, CO 80203-2136
(303) 894-2100
cogcc.state.co.us

Statutory or Regulatory Authority

Citation: Oil and Gas Conservation Act, C.R.S. Title 34-Article 60; 100-Series, 400-Series, 700-Series, and 1100-Series Rules

Last update: January 15, 2021

Substantially Different Definitions

Idle well: Colorado classifies wells as “shut-in,” “inactive,” “suspended operations” (shut down before completion of drilling), “temporarily abandoned,” or “waiting on completion.” See COGCC’s 100-Series Rules.

Inactive well means a shut-in well from which no production has been sold or that has not been utilized for a period of 12 consecutive months, or any well which has been temporarily abandoned for a period of six consecutive months.

Shut-in well means a well which is capable of production or injection by opening valves, activating existing equipment or supplying a power source.

Suspended operations well means a well in which drilling operations have been suspended prior to reaching total depth and at least surface casing has been set and cemented.

Temporarily abandoned well means a well that has all downhole completed intervals isolated with a plug set above the highest perforation or a well which is incapable of production or injection without the addition of one or more pieces of wellhead or other equipment.

Waiting on completion well means a well which has been drilled, cased, and cemented but the objective hydrocarbon formation has not yet been completed or stimulated.

Orphan well: Orphan well means a well for which no owner or operator can be found, or where the

owner or operator is unwilling or unable to plug and abandon the well.

Orphaned site means a site where a significant adverse environmental impact may be or has been caused by oil and gas operations for which no responsible party can be found, or where the responsible party is unwilling or unable to mitigate the impact.

Site restoration: Reclamation means the process of returning or restoring the surface of disturbed land as nearly as practicable to its original condition or to landowner specifications.

Remediation means the process of reducing the concentration of a contaminant or contaminants in water or soil to the extent necessary to ensure compliance with regulatory standards.

Idle Wells

General requirement(s): Colorado does not have a defined time limit for the duration a well may remain shut-in or temporarily abandoned. Colorado requires the operator to perform an MIT on shut-in or temporarily abandoned wells. An operator with “excess” inactive wells is subject to an increase in their financial assurance requirements.

Shut-in wells: An MIT shall be performed within two years of the initial shut-in date, and subsequently every five years as long as the well remains shut-in.

Temporarily abandoned wells: An MIT shall be performed within 30 days of temporarily abandoning the well and subsequently every five years. The operator must submit a notice annually for each well temporarily abandoned well for more than six months, including the reason for the request state and plans for future operation.

The COGCC may require an operator to plug and abandon a well or close a facility if necessary to protect or minimize adverse impacts to public health, safety, welfare, the environment, or wildlife resources, or when the well is no longer used or useful.

Application fee(s): No applicable fees.

Financial assurance requirement(s): An operator is required to increase its financial assurance when its inactive well count is greater than its total financial assurance divided by \$10,000 for each inactive well less than 3,000 feet deep, and by \$20,000 for each inactive well equal to or greater than 3,000 feet in depth. The operator must increase its financial assurance by \$10,000 / \$20,000 depending on well depth for each excess inactive well.

Surface equipment requirement(s): The COGCC sets standards for inspection and operation of production equipment regardless of whether a well is active or idle.

Operators must provide 48-hour notice to COGCC of pressure testing of shut-in wells, temporarily abandoned wells, flowlines, and crude oil transfer lines prior to returning to service.

Provisions for exemptions or exceptions: An operator may submit an alternative plan for additional financial assurance, based on returning wells to production or plugging and abandoning wells on an approved schedule.

Orphan wells

Actions to identify and address orphan wells:

Current actions include routine field inspections for historical well identification and complaint response. Staff audits historic orphaned well projects to evaluate reclamation progress until the sites are administratively closed.

Process for prioritizing orphan wells for plugging: Orphaned sites are prioritized into low, medium, and high categories based on multiple risk factors, including population density and urbanization; environmental factors; years in service; active spills; stormwater issues; noxious weeds; wildlife, livestock, or vegetation impacts; surface equipment; bradenhead pressure; mechanical integrity test data; any documented history of venting or leaking; and time since the well was designated as an orphaned well.

IDAHO

Regulatory Agency

Idaho Department of Lands

300 North 6th Street, Suite 103

Boise, ID 83702

ogcc.idaho.gov

Statutory or Regulatory Authority

Citation: IDAPA 20.07.02.220, IDAPA 20.07.02.320, IDAPA 20.07.02.501

Last update: March 20, 2020 – Temporary

Substantially Different Definitions

Idle well: Idaho utilizes the term “inactive well,” defined as a well that is inactive for 24 continuous months unless the owner or operator has received approval for an extension, or after an owner or operator fails to submit an annual report for an active well.

Site restoration: Idaho uses the term “reclamation” instead of “restoration.” Reclamation essentially means to stabilize the site structurally and environmentally, while restoration means returning the site to the pre-activity condition. Restoration is not always possible.

Idle Wells

General requirement(s): The owner or operator must plug and abandon an inactive well within six months after notification by the Department.

The owner or operator must apply to the Department to change the status of a well from inactive to active. A MIT may be required if the well has been worked over or if a test has not been conducted for five years or longer.

Application fee(s): None.

Financial assurance requirement(s): An owner or operator must provide a bond of at least \$10,000 plus \$8 for each foot of well length for each inactive well. Inactive wells may not be covered by a blanket bond.

Mechanical integrity requirement(s): Inactive wells shall have a MIT performed within two years after the date of last use. If the well becomes incapable of production, a mechanical integrity test shall be performed within 30 days.

Surface equipment requirement(s): If surface equipment excluding the wellhead is removed, a mechanical integrity test shall be performed within 30 days.

Provisions for exemptions or exceptions: The Department may approve an extension of the requirement to plug an inactive well of up to three years if the owner or operator submits (1) a written request to extend inactive status; (2) an individual bond if the well was covered by a blanket bond; and (3) a description of how the well is closed to the atmosphere with a swedge and valve, packer, or other approved method, and how the well is to be maintained.

Orphan wells

Actions to identify and address orphan wells: Historical records on file with the Idaho Geological Survey – None.

ILLINOIS

Regulatory Agency

Illinois Department of Natural Resources
Office of Oil and Gas Resource Management
One Natural Resources Way
Springfield, IL 62702-1271
illinois.gov

Statutory or Regulatory Authority

Citation: Production Wells – 62 Ill. Adm. Code Section 240.1130 (Amended at 42 Ill. Reg. 5811, effective March 14, 2018)

Class II UIC Wells – 62 Ill. Adm. Code Section 240.1132 (Amended at 42 Ill. Reg. 5811, effective March 14, 2018)

Last update: March 14, 2018

Substantially Different Definitions

Idle well: Idle wells must meet criteria for “temporary abandonment” in the Illinois Administrative Code.

A well that has not had commercial production during the last 24 consecutive months shall be deemed abandoned and must be plugged unless the well has been approved for TA status.

Orphan well: A well has not produced and for which no fee has been paid or no bond coverage provided for two consecutive years; and no permittee or owner can be identified or located.

Orphaned wells include wells for which an oil and gas well permit is not required if the well is a conduit for oil or saltwater intrusions into freshwater zones or onto the surface which may be caused by oil and gas operations.

Site restoration: Within six months after a well is plugged, all liquid plugging waste must be removed from the pit; pits filled and leveled; drilling and production equipment, rock or concrete bases, machinery, and equipment removed; casing cut off and capped; excavations, holes, and pits filled; and the surface leveled.

Idle Wells

General requirement(s): The permittee of either a production or Class II UIC well must apply for TA status on a prescribed form.

TA status may be approved for two to five years and may be extended. The well must have a proper bond in effect, have an intact wellhead cap and valve, and have a fluid level test. Additional downhole safeguards may be required depending on the results of the fluid level test. If a TA request is denied, the permittee shall plug the well or correct the deficiency within 90 days. Class II injection wells that are TA are subject to the same MIT requirements as for active wells.

Provisions for exemptions or exceptions: Illinois has a number of gas production wells that do not have access to pipelines. These wells are sitting idle, but due to a broad interpretation of the rules and lease language, these wells are considered active if they are providing yearly shut-in payments to the mineral owners. Illinois tracks this process through our Idle Well System.

Orphan wells

Actions to identify and address orphan wells: If a well inspector locates an undocumented or unidentified, i.e., abandoned, well, and no permittee can be identified, the well is determined to be orphan and placed in the Plugging and Restoration Program. The inspector may locate the well during a routine inspection or in response to a landowner’s report of such a well to the Department.

Process for prioritizing orphan wells for plugging: Wells that are leaking produced fluids, oil, and saltwater are given highest priority. The higher the rate of leakage, the higher the priority. The location of the wells is also a consideration in establishing priority. If the location is on the bank or in the proximity of a “blue line” waterway (indicating waters of the U.S.) and danger of erosion exists that the well(s) will be in the blue line water way, priority is given to this well. Additionally, if conditions exist that could be a hazard to the public and/or wildlife, this, too, is taken into consideration in establishing priorities.

INDIANA

Regulatory Agency

Department of Natural Resources

Division of Oil and Gas

402 West Washington Street, Room 293

Indianapolis, IN 46204

in.gov/dnr

Statutory or Regulatory Authority Citation: 312 IAC 29-33-4

Last update: January 2018

Substantially Different Definitions

Idle well: A well that is determined to be a dry hole, ceases to produce oil or natural gas, or is no longer operated for its permitted purpose must be plugged unless an extension is granted. Indiana uses the term Temporarily Abandoned (TA) for wells that have received approval to remain in an idle status.

Orphan well: Indiana defines orphan wells as units that are not producing and for which no financially responsible party exists.

Site restoration: Not specifically defined; however, the operator must close tanks or plugging pits; remove drilling and production equipment, above ground flow lines, and debris associated with the well; fill and regrade all excavations; remove contaminated soil; and restore the well site as nearly as practicable to its condition before drilling.

Idle Wells

General requirement(s): An application for Temporary Abandonment must be submitted on a form prescribed by the Division. The application must include information demonstrating the reasons for retaining the well. The owner or operator must ensure that the well does not threaten an underground source of drinking water and report the results of monitoring annually. TA approval may be granted for a period of up to five consecutive years.

Application fee(s): There are no application fees for TA's.

Financial assurance requirement(s): No additional financial assurance required for TA.

Mechanical integrity requirement(s): Yes, a MIT, or the results of a fluid level test via acoustical or wireline measuring methods, are acceptable.

Surface equipment requirement(s): The well must be sealed at surface and any unrelated equipment must be removed from the site.

Other requirement(s): Pits must be filled, and identification posted.

Provisions for exemptions or exceptions: The well must otherwise be in compliance with state rules in order to be approved for TA.

Orphan wells

Actions to identify and address orphan wells: Created a program for landowners to register the wells free of charge for non-commercial uses.

Process for prioritizing orphan wells for plugging: Orphan wells are prioritized for plugging based upon factors such as whether the well is leaking, is within 500' of a residence or commercial building or water well, is in an area subject to frequent flooding, or is open at surface.

KANSAS

Regulatory Agency

Kansas Corporation Commission

266 N. Main Street, Suite 220
Wichita, KS 67202-1513
kcc.ks.gov

Statutory or Regulatory Authority

Citation: K.A.R. 82- 3-111

Last update: October 24, 2008

Substantially Different Definitions

Idle well: Kansas uses the term “temporarily abandoned” for idle wells requiring regulatory approval. If a well is inactive for greater than 90 days, is not granted TA approval, and is not exempt from the TA filing requirements as described below, it is deemed abandoned and must be plugged or returned to operation.

Orphan well: Kansas uses the term “abandoned well,” defined as a well that is not claimed on an operator’s license that is active with the commission and is unplugged, improperly plugged or no longer effectively plugged.

Idle Wells

General requirement(s): The operator must submit an application for TA on a prescribed form, including basic information on the well construction and operation, shut-in date, casing fluid level, and verification of a lease.

Application fee(s): None.

Mechanical integrity requirement(s): The Commission requires the operator demonstrate mechanical integrity in order for the well to have TA status beyond 10 years.

Surface equipment requirement(s): Commission staff may deny TA applications for lack of surface control.

Other requirement(s): Commission staff may deny TA applications where the operator indicates they no longer have a valid lease.

Provisions for exemptions or exceptions: Wells that are fully equipped and capable of returning to service and that have been in operation within the last 364 days are exempt from filing for TA status.

After 10 consecutive years of TA status, an operator must file an application for an exception to the 10-year limitation. The application has to be published, properly noticed, and the Commission may require a hearing on the application.

Orphan wells

Actions to identify and address orphan wells: Legislation passed in 2021 helped clarify the responsible parties for plugging abandoned wells.

Process for prioritizing orphan wells for plugging: Kansas prioritizes wells by the threat they pose to usable water, either surface or ground, and public safety. The categories are 1A, 1B, 1C, and 2 as outlined in our legislative report here: <https://kcc.ks.gov/images/PDFs/legislative-reports/2019-Abandoned-Wells-Report.pdf>.

KENTUCKY

Regulatory Agency

Department of Natural Resources

Division of Oil and Gas

300 Sower Boulevard

Frankfort, KY 40601

ky.gov

Statutory or Regulatory Authority

Citation: KRS 353.560, KRS 353.562-564, KRS 353.588, KRS 353.590, 805 KAR 1:060

Last update: June 27, 2019

Substantially Different Definitions

Idle well: Kentucky uses the term “temporarily abandoned” (TA) for a well approved by the Division to be idle, and “abandoned” for wells idle without regulatory approval.

Orphan well: “Orphan well” means any oil or gas well which has been determined by the Energy and Environment Cabinet to be improperly abandoned or improperly closed, and that: (1) predates the permitting requirements enacted in 1960, or (2) has no known history of permitting or bonding; and (1) has no known responsible owner or operator or (2) all responsible owners or operators are determined to be financially insolvent.

Idle Wells

General requirement(s): Operators must submit a temporary abandonment application form which must be signed by a Division field inspector. The Division issues a notice to the operator that the application has been granted or denied and specifies an expiration date.

Application fee(s): No fee.

Financial assurance requirement(s): There is no new bonding required for the TA status. The original plugging bond that was filed when the drilling permit was issued is all that is required.

Mechanical integrity requirement(s): Class II wells that remain idle over two years must be plugged, unless an exception is granted pursuant to a request by the operator with notice provided to the Division of steps taken to protect USDW during the idle period.

Surface equipment requirement(s): Well site must be maintained such that wellhead can be accessed and inspected properly to qualify for a TA.

Other requirement(s): All wells on which a TA permit has been issued shall be cased and capped prior to temporary abandonment in a manner to protect all potential oil, gas, and freshwater zones.

Provisions for exemptions or exceptions: No exemptions.

Orphan wells

Actions to identify and address orphan wells:

Field inspectors identify and document new orphan wells in the course of their daily well inspections, and in response to citizen reports.

Process for prioritizing orphan wells for plugging:

Yes, a rating system that considers presence of active leaks, safety risks, environmental damage, wellhead pressure, access, etc.

LOUISIANA

Regulatory Agency

Department of Natural Resources

PO Box 94275

Baton Rouge, LA 70804-9275

dnr.louisiana.gov

Statutory or Regulatory Authority

Citation: R.S. 43:XIX:101 and 137

Last update: June 2015

Substantially Different Definitions

Idle well: Louisiana classifies wells as “shut-in”, “inactive”, or “temporarily abandoned.”

Shut-In – status given to non-producing wells by the operator to describe well condition, dry hole – future utility, dry hole no future utility, productive future utility, productive no future utility, waiting on pipeline, waiting on market.

Inactive – no reported production, disposal, injection, or other permitted activity for a period greater than six months and is not part of an approved production program.

Temporarily abandoned – all cement plugs set in the well as a permanent abandonment except for the top cement plug.

Orphan well: Orphaned oilfield site means an oilfield site which has no continued useful purpose for the exploration, production, or development of oil or gas and which has been declared to be an orphaned oilfield site by the Assistant Secretary.

Site restoration: Proper plugging and abandonment of orphan wells and return of sites to approximate pre-well site conditions suitable for redevelopment.

Idle Wells

General requirement(s): An inactive future utility well must be plugged within five years of becoming inactive unless the operator pays an annual assessment and provides financial security.

Application fee(s): \$250.

Financial assurance requirement(s): Required.

Mechanical integrity requirement(s): No additional requirements.

Surface equipment requirement(s): No additional requirements.

Provisions for exemptions or exceptions: Wells can be exempt from these requirements if they are on an approved production program or an approved schedule of abandonment.

Orphan wells

Actions to identify and address orphan wells: On occasion during inspections, an unidentified wellbore is discovered, for which records are created and the well is placed in the orphan program.

Process for prioritizing orphan wells for plugging:

After each orphan well is inspected, the subsequent findings detailed in the Oilfield Site Restoration Inspection Report are utilized by staff to complete an “Orphan Well Prioritizing System Worksheet.” Points are assigned based on various factors such wellhead damage, leaks and leakage volume, hazards to navigation, etc. The total score is used to categorize the orphan well in the following manner:

Priority 1 – Urgent >30

Priority 2 – High >19

Priority 3 – Moderate >10

Priority 4 – Low 10 and under

MICHIGAN

Regulatory Agency

Oil, Gas, and Minerals Division Environment, Great Lakes, and Energy Department

PO Box 30256
Lansing, MI 48909-7756
michigan.gov/egle

Statutory or Regulatory Authority

Citation: Natural Resources and Environmental Protection Act, Act No. 451 of the Public Acts of 1994, as amended - Part 615, Supervisor of Wells and the Administrative Rules and Part 616 Orphan Well Fund

Last update: March 2015

Substantially Different Definitions

Idle well: Michigan classifies idle wells as “Shut-in”, “Temporary Abandoned”, or “suspension of oil and gas operations.”

Shut-in means an action by a permittee to close down a producing well, a well capable of producing, or an injection well temporarily for such things as repair; rework; recovering reservoir pressure; preparing for or evaluating for Enhanced Oil Recovery (EOR) or other injection projects; waiting for connection to a sales line; or lack of a market.

Temporary Abandoned (TA) means a well that has been granted approval to remain idle (not used for its permitted or intended purpose) for more than 12 consecutive months.

Suspension of oil and gas operations is an action by the Supervisor of Wells ordering the permittee to cease operations. Suspension of operation orders are made to protect the public health and safety and the environment, prevent waste, and for compliance and enforcement actions.

Orphan well: An abandoned or improperly closed well for which no owner or operator is known, or for which all owners or operators are insolvent.

Site restoration: Site restoration means the filling and leveling of all cellars, pits, and excavations; the removal or elimination of all debris; the elimination of conditions that may create a fire or pollution hazard; the minimization of erosion; and the restoration of the well

site as nearly as practicable to the original land contour or to a condition approved by the supervisor after consulting with the surface owner of the land and with the operator of a natural gas storage field if the well site is within the boundary of a natural gas storage field.

Idle Wells

General requirement(s): Temporary abandonment status shall be allowed only upon written application to, and approval of, the supervisor. Permittee must demonstrate that retaining the well in idle status would not be a risk to public health and safety, cause waste, or harm the environment, and must provide the reasons the well should be granted TA status.

Application fee(s): None.

Financial assurance requirement(s): Supplemental bonds MAY be required. Bond amounts vary based on risk. The well must qualify for TA status for the following reasons: Mechanical back-up to a producing well on the same production unit; future use (deepening or re-completion); conversion to another use; sales line/market connection; processing constraints; EOR evaluation/ conversion; and future use as observation or monitor well.

Not more than 10 percent of a permittee’s wells may be TA at any time.

Fluid level shall be checked to make sure it is at least 100 feet below freshwater zones.

To keep wells on TA status for longer time periods, permittees may enter into an agreement. This may include supplemental bonding, MITs, placement of down-hole plugs (mechanical or cement), additional pressure monitoring, or other requirement to reduce risks and prevent waste.

Mechanical integrity requirement(s): MITs may be required for temporary abandoned status to be granted.

Surface equipment requirement(s): Surface equipment must be secured. In some cases, tanks must be emptied.

Other requirement(s): Well sites must continue to be maintained and monitored by permittee; wells with greater than 300 ppm H₂S may require additional measures to protect public health; mineral leases and

other agreements must be maintained; and permit transfers must include a written agreement with the acquiring permittee.

Provisions for exemptions or exceptions: Michigan does not exempt any wells. Exceptions are made during the TA status approval process and are extensions of the approved time interval rather than exceptions.

Orphan wells

Actions to identify and address orphan wells:

Primarily react to wells that are leaking or are discovered by landowners.

Process for prioritizing orphan wells for plugging:

Michigan prioritizes wells based on risk to the public health and safety and the environment. Leaking wells are the top category and within that category wells are prioritized by level of H₂S, population and institutional sites, resource values affected or at risk such as surface water, wetlands, recreational areas, volume and type of fluid(s) leaking, age and construction of well, etc. The next category are unplugged wells that are not leaking. These are ranked by the risk or potential for the same items as listed above. The third category are plugged wells which have ongoing environmental issues. These are ranked based on the severity of the environmental issue, potential risks, size of the area affected, media impacted such as residential or public water supply well(s), surface water, or wetlands.

MISSISSIPPI

Regulatory Agency

Mississippi Oil and Gas Board

500 Greymont Avenue, Suite E

Jackson, MS 39202

ogb.state.ms.us

Statutory or Regulatory Authority

Citation: Statewide rules 28 and 53

Last update: For Rule 28, 2/21/2017; for Rule 53, 3/22/1990

Substantially Different Definitions

Idle well: Mississippi regulations use the term “inactive” to refer to a well where production or use as a service well has ceased. Mississippi uses the informal terms of “closed in” for idle oil and gas wells and “standby” for idle and EOR wells.

Orphan well: Mississippi defines “orphan well” as an oil or gas well, including Class II wells, which has not been properly plugged and for which a responsible party cannot be located or for which there is no other party which can be directed to plug the well.

Idle Wells

General requirement(s): Operators must file a report on each inactive well. If the well is inactive for 12 months it must be plugged or returned to use, unless the operator petitions for and is granted an extension. EOR wells in an active project are exempt. Inactive wells must comply with all other applicable rules.

Application fee(s): None.

Financial assurance requirement(s): Must be maintained until the well is plugged and abandoned.

Mechanical integrity requirement(s): Injection or disposal wells must pass annual MIT. None for oil or gas wells.

Surface equipment requirement(s): Injection or disposal wells must be equipped with appropriate pressure gauges. None for oil or gas wells.

Orphan wells

Actions to identify and address orphan wells:

Attempts have been made to locate the wells but have not been successful.

Process for prioritizing orphan wells for plugging:

Wells are prioritized, when necessary, based on danger to human health and the environment.

MONTANA

Regulatory Agency

Board of Oil and Gas Conservation

2535 St. John's Avenue

Billings, MT 59102

dnrc.mt.gov

Statutory or Regulatory Authority

Citation:

ARM 36.22.1303 Well Plugging Requirement

Last Update: 1998

ARM 36.22.1240 Report of Well Status Change

Last Update: 1993

ARM 36.22.1242 Reports by Producers

Last Update: 1993

Substantially Different Definitions

Idle well: Montana has no specific classification for idle wells; however, Montana regulations require a well operator to plug a well within one year after it is no longer capable of production and has no possible future use for EOR or disposal, unless otherwise authorized by the petroleum engineer. Monthly injection or production reports are utilized for idle well analysis.

Site restoration: Montana requires the operator to restore the surface of the location to its previous grade and productive capability and take necessary measures to prevent adverse hydrological effects from the well.

Idle Wells

Requirements for approval: Issues are addressed on a case-by-case basis taking into consideration whether or not the well is pre-regulatory, is located within the boundaries of an active enhanced recovery unit, and if the operator maintains the legal right to utilize the well.

Provisions for exemptions or exceptions: The petroleum engineer may grant an exception to the requirement to plug a well.

Orphan wells

Actions to identify and address orphan wells: File reviews followed by inspection, or inspections alone.

Process for prioritizing orphan wells for plugging: Field inspection ranking based on well status, location, and environmental risk.

NEBRASKA

Regulatory Agency

Nebraska Oil and Gas Conservation

PO Box 399

Sidney, NE 69162

nogcc.ne.gov

Statutory or Regulatory Authority

Citation: Rules, Chapter 3-040

Last update: June 2014

Substantially Different Definitions

Idle well: Nebraska uses the term “inactive well,” which can be classified as “shut-in” (perforations open to the wellbore) or “temporarily abandoned” (perforations beneath a mechanical device which are not in communication with the wellbore). When well operations cease for 60 days, the operator must give notice to the Commission of the change to inactive status.

Idle Wells

General requirement(s): Within one year of giving notice of inactive status, the operator must either plug the well or submit request for a one-year extension with static fluid levels, wellhead pressures, and general statement of future use.

Application fee(s): After two years of inactivity, a fee of \$200/well/year is required with the request for continued inactivity.

Financial assurance requirement(s): The wells remain bonded until final plugging and abandonment operations have been completed.

Mechanical integrity requirement(s): Annular pressure test can allow a five-year shut-in period.

Provisions for exemptions or exceptions: There are no exemptions for compliance with the rule.

Orphan wells

Process for prioritizing orphan wells for plugging: Yes, endangerment to water, land, or air.

NEVADA

Regulatory Agency

Nevada Division of Minerals

Commission on Mineral Resources
400 West King Street, Suite 106
Carson City, NV 89703-4212
minerals.nv.gov

Statutory or Regulatory Authority

Citation: NAC 522.430

Last update: December 21, 2015

Substantially Different Definitions

Idle well: Nevada classifies idle wells as “shut-in.” Nevada regulations require a well in which production casing has been run but which has not been operated for one year, and a well in which no production casing has been run and for which drilling operations have ceased for 30 days, must be immediately plugged.

Site restoration: The operator shall, as soon as conditions permit, upon final abandonment and completion of the plugging of any well, clear the area around the well of all refuse, drain and fill all excavations, remove concrete bases, machinery and materials, and level the surface to leave the site as close to its condition when operations were commenced as practicable.

Idle Wells

General requirement(s): Well must be in compliance with all applicable regulations.

Application fee(s): Sundry notice fee of \$100.

Financial assurance requirement(s): Well bonding must be in place.

Mechanical integrity requirement(s): MITs must be conducted for inactive injection wells under the same provisions as for active wells. They must be conducted at least once each five years for the life of an injection well. The Director may require more frequent tests if conditions warrant.

Surface equipment requirement(s): No specific language.

Provisions for exemptions or exceptions: A shut-in

extension for a period of one year may be requested through a sundry notice form.

Orphan wells

Actions to identify and address orphan wells:

Nevada conducts field observations and review of Google Earth. The Division does coordinate and communicate field observations with the BLM Petroleum Engineer Technician in the BLM’s Nevada State Office, as well as personnel in the BLM’s District and Field Offices within Nevada, on all aspects of oil and gas activities.

Process for prioritizing orphan wells for plugging:

If the well is under bonding through the Division of Minerals, an orphan well matter will be addressed with the operator and landowner as the matter arises.

NEW MEXICO

Regulatory Agency

New Mexico Oil Conservation Division

1220 South St. Francis Drive
Santa Fe, NM 87505
emnrd.state.nm.us

Statutory or Regulatory Authority

Citation: 19.15.5 & 19.15.25 NMAC

Last update: February 2020

Substantially Different Definitions

Idle well: New Mexico does not use the term “idle.” Instead, New Mexico categorizes unused wells as either “inactive” or “approved temporary abandonment” status.

“Inactive well” means a well that is not being used for production, injection, or monitoring, and is not in approved temporary abandonment status.

Approved temporary abandonment means the well is approved to remain unused, but the operator has demonstrated that the construction and condition of the well will prevent damage to the producing zone, migration of hydrocarbons or water, contamination to fresh water or other natural resources, and leakage at the surface.

Orphan well: This term is not expressly defined under New Mexico regulations. However, if a well has been inactive for one year, enforcement action is taken. If the operator fails to bring the well back into compliance, the well is deemed to be orphaned and the OCD may plug the well. If no funding is available from the operator or well financial assurance, the OCD can use the reclamation fund to plug the well and restore the site.

Site restoration: This term is not expressly defined. However, under OCD regulations the operator must level the location, remove deadmen and other junk, close all pits and below-grade tanks, and take other measures necessary or required by the Division to restore the location to a safe and clean condition.

Idle Wells

General requirement(s): Under OCD rules operators are not allowed to have more than the following number of unused wells, not counting those subject to an Agreed Compliance Order setting a schedule for bringing the wells into compliance:

Two wells or 50 percent of the wells the operator operates, whichever is less, if the operator operates

100 wells or less;

Five wells if the operator operates between 101 and 500 wells;

Seven wells if the operator operates between 501 and 1,000 wells;

10 wells if the operator operates more than 1,000 wells.

Application fee(s): No additional fee for TA application.

Financial assurance requirement(s): The operator of a well on state or private land that has been inactive for more than two years must file either a single well inactive bond in the amount of \$25,000 plus \$2 per foot of measured depth, or blanket financial assurance in the following amounts:

First five wells: \$150,000.

Six to 10 wells: \$300,000.

Eleven to 25 wells: \$500,000.

More than 25 wells: \$1,000,000.

Mechanical integrity requirement(s): An operator of a well with approved temporary abandonment status must run an MIT, except for a non-injection well that has been completed within five years and has not been connected to a pipeline. Injection wells are subject to additional MIT requirements.

Surface equipment requirement(s): The operator must demonstrate that the well will not cause contamination of fresh water or other natural resources or surface leakage.

Other requirement(s): The operator shall either properly plug and abandon a well or place the well in approved temporary abandonment after drilling operations have been suspended for 60 days, the well has been determined to be no longer usable for beneficial purposes, or the well has been inactive for one year.

Provisions for exemptions or exceptions: Under New Mexico’s Marginal Well Shut-In Program operators can apply for approval to shut-in wells for up to four years and three months during times of low commodity prices. Operators must provide economic justification and conduct periodic MITs.

Orphan wells

Actions to identify and address orphan wells: New Mexico conducts routine inspections in the field and replies to any reports of concern.

NEW YORK

Regulatory Agency

New York State Department of Environmental Conservation

Division of Mineral Resources
625 Broadway, 3rd Floor
Albany, NY 12233-6500
dec.ny.gov

Statutory or Regulatory Authority

Citations: (1) Environmental Conservation Law, Article 23; (2) Title 6 of the New York Codes, Rules, and Regulations (6 NYCRR 550-559)

Last update: April 29, 2019, for Environmental Conservation Law and September 6, 1991, for regulations

Substantially Different Definitions

Idle well: Not defined in statute or regulation; see “Idle Wells” below for working definition.

New York classifies idle wells as “shut-in”, “temporarily abandoned”, and “orphaned.”

Shut-in – not defined in regulation but understood to be closing in of a well that has produced on a commercial basis without conducting plugging and abandonment operations.

Temporarily abandoned - the discontinuation of operations on or the closing in of a well not previously produced on a commercial basis without conducting plugging and abandoning operations.

Orphan well: Working definition (not in statute or regulation): unplugged, abandoned wells that have not been operated and maintained in accordance with prevailing statute and regulation, and for which no existing owner can be determined.

Site restoration: Working definition (not in statute or regulation): filling of any excavation used during drilling and smoothing the surface to match adjacent terrain. There may be additional requirements based on site conditions or per contract.

Idle Wells

General requirement(s): Written request for continued idle status (shut-in or temporary abandonment) must be submitted prior to one

year for shut-in wells or 90 days for temporarily abandoned wells. Requests are granted upon “demonstration of sufficient good cause” by the operator.

Application fee(s): None.

Financial assurance requirement(s): No additional financial assurance is required.

Mechanical integrity requirement(s): None at present.

Surface equipment requirement(s): None at present.

Other requirement(s): None.

Provisions for exemptions or exceptions: None.

Orphan wells

Actions to identify and address orphan wells:

New York carries out systematic inspections of known and suspected locations; research, evaluation, and collaboration on the use of UAS technologies; and interaction with other state regulators on shared experiences.

Process for prioritizing orphan wells for

plugging: The Department systematically inspects locations where orphan wells are known or suspected to exist. The wells are scored using the IOGCC scoring methodology and the scores are used to guide the plugging prioritization process.

NORTH DAKOTA

Regulatory Agency

Industrial Commission

600 East Boulevard Avenue, Department 405
Bismarck, ND 58505-0840
dmr.nd.gov

Statutory or Regulatory Authority

Citation: North Dakota Century Code § 38-08-04,
North Dakota Administrative Code § 43-02-03-55

Last update: April 1, 2020

Substantially Different Definitions

Idle well: North Dakota classifies idle wells as “inactive” (reported no production or injection for three months), “abandoned” (reported no production or injection for 12 consecutive months), “not completed” (drilled to TD but not completed for 12 months), and “temporary abandoned” (wellbore isolated from target formation, with MIT).

Orphan well: The person or company drilling or operating the well or equipment cannot be found, has no assets with which to properly plug or replug the well or reclaim the site, or cannot be legally required to plug or replug the well or to reclaim the site, pipeline or associated facilities.

Site restoration: North Dakota does not have a specific definition, but North Dakota law requires any land disturbed by construction to be reclaimed as close as practicable to its original condition as it existed before the construction disturbance.

Idle Wells

TA Requirements: Operator must file an application for prior approval. Commission reviews well file and field inspector may approve after MIT. Operator must file follow up report showing completion of requirements for approved TA status.

Application fee(s): \$100 for approved renewal.

Financial assurance requirement(s): No more than six wells in TA status greater than seven years, abandoned wells, or plugged and abandoned wells not properly plugged and/or reclaimed are allowed on blanket bond.

Mechanical integrity requirement(s): Wells must have perforations isolated and pass MIT in the presence of field inspector.

Provisions for exemptions or exceptions: The Commission may periodically grant waivers for wells to remain on inactive status or remain not completed for more than 12 months due to economic conditions.

Orphan wells

Actions to identify and address orphan wells: North Dakota accesses bonding and the Abandoned Oil and Gas Well Plugging and Site Reclamation Fund.

Process for prioritizing orphan wells for plugging: The well, equipment, pipeline, or associated facilities are leaking or likely to leak oil, gas, or saltwater, and/or is a threat to contaminate an Underground Source of Drinking Water (USDW).

The well, equipment, pipeline, or associated facilities are likely to cause a serious threat of pollution or injury to the public health or safety.

There is no bond covering the well to be plugged or the site to be reclaimed, or there is a bond but the cost of plugging or replugging the well exceeds the amount of the bond.

OHIO

Regulatory Agency

Ohio Department of Natural Resources

Division of Oil and Gas Resources Management
2045 Morse Road, Building F
Columbus, OH 43229-6693
ohiodnr.gov

Statutory or Regulatory Authority

Citation: Ohio Revised Code 1509.062 (idle well)
Ohio Revised Code 1509.071 (orphan well)

Last update: June 30, 2010

Substantially Different Definitions

Idle well: Referred to as nonproducing or idle. Temporary inactive status is Ohio's idle well regulatory program.

Orphan well: Ohio uses the term "Idle and orphaned well." a well for which a bond has been forfeited or an abandoned well for which no money is available to plug the well.

Site restoration: Ohio requires the operator to fill all pits; remove drilling supplies and drilling equipment; grade or terrace and plant, seed, or sod the area; remove all production and storage structures, supplies, and equipment, and any oil, salt water, and debris, and fill any remaining excavations.

Idle Wells

General requirement(s): The well owner and the well must be in compliance with the statute, rules, permit terms and conditions, and applicable orders.

The applicant must demonstrate that the well is of future utility and that applicant has a viable plan to utilize the well within a reasonable period of time; and that the well poses no threat to the health or safety of persons, property, or the environment. In addition, the applicant must provide additional information such as GPS coordinates of all surface equipment, production equipment inventory, and well construction information and annular pressures.

Application fee(s): Nonrefundable \$100 for initial application; nonrefundable \$250 for first renewal; nonrefundable \$500 for each subsequent renewal

Financial assurance requirement(s): The Chief may require a surety bond not to exceed \$10,000 for each well after a third renewal of temporary inactive status.

Surface equipment requirement(s): All liquids and gases from all storage tanks, pipelines, and other equipment associated with the well must be emptied.

Provisions for exemptions or exceptions: None.

Orphan wells

Actions to identify and address orphan wells: The Division purchased a magnetometer to attach to a drone for surveying property to locate orphan wells.

The Division has also completed a memorandum of understanding with the Ohio Department of Transportation to fly a drone with the Division's magnetometer on a full-time basis to locate orphan wells. The Division has financially participated in a high accuracy LiDAR scan of the entire state. The Division intends to use the LiDAR to identify orphan well features. The Division is working with the state's oil and gas associations on data collection by the associations to identify orphan wells. Operators with field knowledge of potential orphan wells are reporting them in an organized manner to the Division.

Process for prioritizing orphan wells for plugging:

The Division has a scoring matrix for determining the priority of plugging wells that includes high priority, medium priority, and low priority classifications.

The scoring matrix evaluates human health, safety, and environmental risk factors on a weighted basis to establish a plugging priority. Wells are given a classification and a separate overall score.

OKLAHOMA

Regulatory Agency

Oklahoma Corporation Commission

PO Box 52000

Oklahoma City, OK 73152-2000

www.occeweb.com

Statutory or Regulatory Authority

Citation: Oklahoma Administrative Code (OAC)

Title 165: Corporation Commission Chapter 10: Oil and Gas Conservation 165:10-11-3

Title 165: Corporation Commission Chapter 5. Rules of Practice 165:5-7-39

Last update: Effective October 2020, are reviewed and updated on a regular basis

Oklahoma Statutes, Title 52-310

Substantially Different Definitions

Idle well: May be classified as shut-in, Temporarily Abandoned (TA), or inactive.

Orphan well: Oklahoma does not have a specific definition; however, the Commission considers a well an orphan when the company is out of business and the state is left with the responsibility of plugging.

Site restoration: Within 90 days after a well is plugged and abandoned, the well site shall be cleared of all equipment, trash, and debris. Any foreign surface material is to be removed and the location site restored to as near to its natural state as reasonably possible, except by written agreement with the surface owner. If the vegetative cover is destroyed or significantly damaged, a bona fide effort shall be made to restore or re-establish the vegetative cover within 180 days after abandonment of the well.

Idle Wells

General requirement(s): All wells listed as shut-in, TA, or inactive are deemed a well in operation and must meet all of the requirements for such: proper lease signs, removal of junk, trash, and debris, and removal of fire hazards, and the lease road shall be maintained at all times for any emergency vehicles and OCC field staff ingress and egress.

Application fee(s): No fees for shut-in or inactive wells; \$100 for Temporary Exemption from Well Plugging.

Financial assurance requirement(s): All operators must have valid Cat. A or B surety of minimum of \$25,000.00, for all their wells, this can be increased to \$100,000.00 through notice and hearing if an operator demonstrates a poor track record with Commission rules. Some Commercial SWD well sites may be required to have a higher surety depending on the size of the facility and associated pits.

Mechanical integrity requirement(s): All MITs must be kept up to date.

Surface equipment requirement(s): Must be maintained to prevent pollution or trash and debris.

Other requirement(s): All idle well must be maintained as if they are active.

Provisions for exemptions or exceptions:

Temporary Exemption from Plugging (Form 1003A) for any Oil or Gas wells. Any exceptions (other than a Temporary Exemption from Plugging) would be through application and hearing and would be issued (if approved) by an order of the commission.

Orphan wells

Actions to identify and address orphan wells:

Oklahoma conducts ongoing record searches and site inspections. Oklahoma is developing a drone program and preparing to perform magnetometer surveys of areas where there have been numerous unknown wells located in the past.

Process for prioritizing orphan wells for plugging:

Category 1. Life Threatening

Category 2. Emergency: potential environmental pollution. Category 3. Potential danger to personal property.

Category 4. Not life threatening and is not an immediate danger to environment or personal property.

Category 5. No immediate danger: conditions have existed for many years and pose no immediate danger.

PENNSYLVANIA

Regulatory Agency

Department of Environmental Protection

PO Box 8765

Harrisburg, PA 17105-8765

(717) 772-2199

dep.pa.gov

Statutory or Regulatory Authority

Citation: 58 Pa.C.S. §§ 3203, 3213, 3214, 3220 and 3271

Last update: 2021

Substantially Different Definitions

Idle well: Although Pennsylvania does not have a definition for “idle” wells, the state has historically classified “idle” wells as either “abandoned” (see definition, below) or “inactive” (upon application, a well may be granted this status if it is mechanically sound and intended to be put back into production, among other requirements. However, the “idle” well classification is most appropriate for “inactive” wells, which encompasses wells in the Commonwealth that are legally eligible for deferred plugging requirements because they have a demonstrated future utility.

Abandoned well: A well (1) that has not been used to produce, extract or inject any gas, petroleum or other liquid within the preceding 12 months; (2) for which equipment necessary for production, extraction or injection has been removed; or (3) considered dry and not equipped for production within 60 days after drilling, re-drilling or deepening. The term does not include wells granted inactive status.

Orphan well: “Orphan well” is defined as (1) an abandoned well or (2) 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.

Site restoration: Although Pennsylvania does not have a definition of “site restoration,” well operators are required to implement erosion and sedimentation control measures, restore the well site, remove or fill all pits, remove all supplies and equipment, and return the site to approximate original contours and capable

of supporting the uses that existed prior to drilling the well.

Idle Wells

General requirement(s): To obtain inactive status, the applicant shall affirmatively demonstrate to the Department’s satisfaction that the condition of the well is sufficient to prevent damage to the producing zone or contamination of fresh water or other natural resources or surface leakage; stop the vertical flow of fluid or gas within the well bore; protect fresh groundwater; and pose no threat to the health and safety of persons, property or the environment. The operator must demonstrate that the well has future utility, and the well must have an appropriate bond.

Application fee(s): None.

Financial assurance requirement(s): No additional financial assurance is required for idle wells.

Mechanical integrity requirement(s): An operator granted inactive status shall monitor the integrity of the well on an annual basis.

Provisions for exemptions or exceptions: None.

Orphan wells

Actions to identify and address orphan wells: Pennsylvania’s statute requires abandoned/orphan wells to be reported to DEP and they are investigated as reports are filed by third parties.

Process for prioritizing orphan wells for plugging: Pennsylvania prioritizes wells based on a scoring system which considers environmental, health and safety concerns.

SOUTH DAKOTA

Regulatory Agency

Department of Agriculture and Natural Resources
2050 West Main, Suite One
Rapid City, SD 57702
danr.sd.gov

Statutory or Regulatory Authority

Citation: ARSD 74:12:03:03

Last update: January 12, 2012

Substantially Different Definitions

Idle well: South Dakota uses the term “temporarily abandoned wells.” Temporarily abandoned wells are defined as wells that have not produced or injected for a period of six or more months. South Dakota also uses the term “Shut-In” for wells that are idle for a period of six months or less.

Orphan well: South Dakota does not have a specific definition.

Idle Wells

General requirement(s): Written approval must be obtained from the Secretary of the Department of Agriculture and Natural Resources for the temporary abandonment of a well. A well that is not completed with production casing may not be temporarily abandoned and must be plugged immediately. A well with production casing may not be temporarily abandoned for more than six months, unless the operator is granted an extension by the Secretary.

Before approving a request for extension, the Secretary may require mechanical integrity testing of the temporarily abandoned or shut-in well.

A temporarily abandoned or shut-in well that successfully passes a MIT may not be required to undergo another test for five years unless the Secretary finds that circumstances have substantially changed to alter the condition of the well.

The manner in which the well is to be maintained must be reported to and approved by the Secretary. Bonding requirements must be met until the well is permanently abandoned.

Application fee(s): None.

Financial assurance requirement(s): The Department of Agriculture and Natural Resources and the Board of Minerals and Environment have the authority and discretion to require an additional \$20,000 in surety for each well that is idle or inactive for more than six months.

Mechanical integrity requirement(s): Before approving a request for extension, the Secretary may require a MIT of the temporarily abandoned or shut-in well. A temporarily abandoned or shut-in well that successfully passes a mechanical integrity test may not be required to undergo another test for five years unless the Secretary finds that circumstances have substantially changed to alter the condition of the well.

Provisions for exemptions or exceptions: None.

Orphan wells

Actions to identify and address orphan wells: Currently it is believed there are no undocumented or unidentified orphan wells.

Process for prioritizing orphan wells for plugging: None.

TEXAS

Regulatory Agency

Railroad Commission of Texas

PO Box 12967
Austin, TX 78711
rrc.state.tx.us

Statutory or Regulatory Authority

Citation: Texas Natural Resources Code 89.023 and 89.024
16 Texas Administrative Code 16 TAC §§ 3.14 (b)(2) and 3.15(a)(6)

Surface Equipment Removal Requirements and Inactive Wells SWR 3.15

Plugging- SWR 3.14

Last update: Amended to be effective January 1, 2017

Substantially Different Definitions

Idle well: Classification: Texas uses the term “Inactive Well:” an unplugged well that has been spudded or has been equipped with cemented casing and that has no reported production, disposal, injection, or other permitted activity for a period of greater than 12 months.

Idle Wells

General requirement(s): In order to obtain a plugging extension:
Operator must maintain a valid Organization Report.
Operator must have a good faith claim to continue to operate the well.

Well must be in compliance with Commission rules and regulations.

Application fee(s): Fees apply in certain circumstances outlined below.

Financial assurance requirement(s): To obtain a plugging extension the operator must select one of eight options for each inactive well:

An Operator may select one of the following “Blanket” options: 10 percent Plugged/Restored at the time of the last annual renewal of the operator’s Organization Report – Form P-5;

Blanket additional financial security covering the amount of the cost calculation for plugging all inactive wells or \$2 million dollars, whichever is less;

If the operator is a publicly traded entity as the “debtor” and the Commission as the “secured creditor”

OR

An Operator may select one of the following “Individual Well” options:

- An Abeyance of Plugging Report covering the inactive well plus a fee of \$250.00
- An Abeyance of Plugging Report is a document prepared by a professional engineer or geoscientist which certifies that the well may be ultimately restored to production
- Enhanced Oil Recovery (EOR) project status (if eligible) – EOR is defined as a project that uses any process for the displacement of oil or other hydrocarbons from a reservoir other than primary recovery and includes the use of an immiscible, miscible, chemical, thermal, or biological process.
- Integrity Test – performed on an inactive well not otherwise required by Commission rule to be tested plus a fee of \$125.00.
- Additional approved financial security - supplemental bond, letter of credit, or cash deposit in an amount equal to the estimated plugging cost based on the average per foot cost, by district, for state funded plugging operations in the previous fiscal year.
- Escrow deposit – cashier’s check in the amount of 10 percent of the estimated plugging cost based on the average per foot cost, by district, for state funded plugging operations in the previous fiscal year.

Mechanical integrity requirement(s): For a well more than 25 years old, the operator successfully conducts and the Commission or its delegate approves a fluid level or hydraulic pressure test establishing that the well does not pose a potential threat of harm to natural resources, including surface and subsurface water, oil, and gas.

Surface equipment requirement(s): The operator must comply with surface equipment removal requirements based on the age of the inactive well.

Provisions for exemptions or exceptions: None.

Orphan wells

Actions to identify and address orphan wells: Unknown or unidentified wells are brought to the Commission’s attention through discovery by an inspector on a routine inspection, or through a complaint being filed. Once brought to the Commission’s attention, a thorough research effort is conducted on all available records in the Central Records department and the district office. This includes mainframe system data, historical maps, run tickets, etc.

Process for prioritizing orphan wells for plugging: Prioritization system considers well completion, wellbore conditions, well location with respect to sensitive areas, and various environment, safety, or economic concerns. Wells posing greatest threat to public safety and the environment are plugged first.

UTAH

Regulatory Agency

Utah Department of Natural Resources

Division of Oil, Gas and Mining

PO Box 145801

Salt Lake City, UT 84114-5801

naturalresources.utah.gov

Statutory or Regulatory Authority

Citation: Utah Administrative Code R649-3-36

Last update: 2003

Substantially Different Definitions

Idle well: Utah uses the terms “Shut-in” and “temporarily abandoned.”

Shut-in Well means a well that is completed, is shown to be capable of production in paying quantities and is not presently being operated.

Temporarily Abandoned Well means a well that is completed, is shown not capable of production in paying quantities, and is not presently being operated.

Orphan well: Utah uses the term “abandoned” to describe a well for which there is no reclamation surety or the forfeited surety is insufficient for plugging and reclamation.

Site restoration: The operator must meet the restoration requirements of a federal, Indian, or state landowner. If the operator cannot agree on restoration with a private landowner, the Division may establish minimum restoration requirements, which shall consider the condition of the land prior to disturbance, the extent of proposed disturbance, the difficulty to conduct complete restoration, the potential for pollution, the requirements for abating pollution, and the possible land use after restoration is completed.

Idle Wells

General requirement(s): If a well is to be shut-in or temporarily abandoned for a period exceeding 12 consecutive months, the operator shall file a Sundry Notice providing the following information:

Reasons for shut-in or temporarily abandonment of the well.

The length of time the well is expected to be shut-in or temporarily abandoned.

- An explanation and supporting data, showing the well has integrity, meaning that the casing, cement, equipment condition, static fluid level, pressure, existence or absence of USDW and other factors do not make the well a risk to public health and safety or the environment.

Application fee(s): None.

Financial assurance requirement(s): If the Division finds that a well is in violation of shut-in and temporarily abandoned well requirements, or if the minimum well site restoration requirements suggest to the Division that bond coverage for a well should be increased, the Division shall require a bond amount in the amount of actual plugging and site restoration costs.

Provisions for exemptions or exceptions: A well may be initially shut-in or temporarily abandoned for a period of twelve consecutive months without additional requirements.

Orphan wells

Actions to identify and address orphan wells:

Utah inspects and investigates areas of historic oil and gas activity and looks at old reports to try to ensure all undocumented wells have been captured. Utah grids off areas for inspection. Utah will also be using drone technology to help with this process.

Process for prioritizing orphan wells for plugging:

Yes.

VIRGINIA

Regulatory Agency

Department of Mines, Minerals and Energy

Division of Gas and Oil

3405 Mountain Empire Road

Big Stone Gap, VA 24219

dmme.virginia.gov

Statutory or Regulatory Authority

Citation: Virginia Gas and Oil Regulations
4VAC25- 150-390. Shut-In Wells

Last update: December 2016

Substantially Different Definitions

Idle well: Only classification Virginia has for nonproducing wells is “shut-in.”

Orphan well: The Code of Virginia defines an orphaned well as a well abandoned prior to July 1, 1950, or a well for which no records exist concerning drilling, plugging, or abandonment.

Site restoration: The Code of Virginia defines restoration as all activity required to return a permitted site to other use after gas, oil, or geophysical operations have ended, as approved in the operations plan for the permitted site.

Idle Wells

General requirement(s): If a well is shut-in or otherwise not produced for a period of 12 consecutive months, the permittee shall measure the shut-in pressure on the production string or strings and report such pressures to the Division annually. If the well is producing on the backside or otherwise through the casing, the permittee shall measure the shut-in pressure on the annular space.

Should the well remain in a nonproducing status for a period of two years, the permittee shall submit a plan for future well production to the director. A nonproducing well shall not remain unplugged for more than a three-year period unless approved by the director.

Application fee(s): There is no fee. Shut-in wells are reported annually as part of each company’s Annual Report.

Financial assurance requirement(s): Bonding and financial security required as for other wells.

Provisions for exemptions or exceptions: A nonproducing well shall not remain unplugged for more than a three-year period unless approved by the director.

Orphan wells

Actions to identify and address orphan wells:

Information about the Orphaned Well Fund and instructions on how to report an abandoned well is provided on the Division website.

Process for prioritizing orphan wells for plugging:

Prioritization is based on an assessment of risk to public safety and environmental impact.

WEST VIRGINIA

Regulatory Agency

West Virginia Department of Environmental Protection Office of Oil and Gas

601 57th Street, Southeast
Charleston, WV 25304
dep.wv.gov

Statutory or Regulatory Authority

Citation: W. Va. Code Section 22-6-19, 22-10 and 35CSR5

Last update: 1993 for 35 CSR 5 and 2013 for 22-6

Substantially Different Definitions

Idle well: West Virginia uses the term “abandoned” (a well completed as a dry hole or is not in use for twelve consecutive months) and “inactive.”

Abandoned wells: A well which is completed as a dry hole or which is not in use for a period of twelve consecutive months shall be presumed to have been abandoned and shall promptly be plugged by the operator, unless the operator furnishes satisfactory proof to the director that there is a bona fide future use for such well.

Inactive wells: For any well which is not in active (in use) status, an operator must demonstrate bona fide future use to avoid having such well deemed abandoned. Upon submittal of a completed designation of bona fide future use to the chief, any permitted well which satisfies the requirements shall be deemed to be in inactive status.

Site restoration: West Virginia refers to the activity defined as reclamation, which includes recontouring and revegetating the site.

Idle Wells

General requirement(s): For any well which is not in active status, an operator must demonstrate bona fide future use to avoid having such well deemed abandoned.

Upon submittal of a completed designation of bona fide future use to the chief, a permitted well which satisfies the following requirements shall be deemed to be in inactive status:

- The condition of the well is sufficient to prevent waste of oil and gas.
- The condition of the well is sufficient to prevent pollution of waters of the state.
- Report production annually as zero.

Application fee(s): There are no fees required for the filing of a Bona Fide Future Use request.

Financial assurance requirement(s): The operator must satisfy the standard bonding requirements.

Provisions for exemptions or exceptions: None.

Orphan wells

Actions to identify and address orphan wells: Inspector’s document and inspect potential orphan wells as they are discovered. Operators may identify and plug wells in the Area of Review for horizontal wells.

Process for prioritizing orphan wells for plugging: Yes, wells are classified by actual or potential threats to human health and safety or the environment.

WYOMING

Regulatory Agency

Oil and Gas Conservation Commission

PO Box 2640

Casper, WY 82602

wogcc.wyo.gov

Statutory or Regulatory Authority

Citation: Chapter 3, Sections 4, 16 and 22

Last update: March 2016

Substantially Different Definitions

Idle well: Wyoming uses the terms “shut-in” and “temporarily abandoned.”

Shut-In Well shall mean a well not currently considered active in which the completion interval has not been isolated from the wellbore above and where the wellbore condition is such that its utility may be restored by opening valves or by energizing equipment involved in operating the well.

Temporarily Abandoned Well shall mean a well in which the completion interval has been isolated from the wellbore above and the surface. The completion interval may be isolated by a retainer, bridge plug, cement plug, tubing and packer with tubing plug, or any combination thereof.

Idle Wells

General requirement(s): Operator must request the Supervisor’s approval every two years for a well to remain idle. The agency also does an annual idle well plan review for each operator to determine which wells are idle and if the operator has plans to plug or produce the idle wells during the next year. If there are no plans and if the well has been idle at least one year the agency may require idle well bonds be posted.

Application fee(s): None.

Financial assurance requirement(s): An operator can post either individual well bonds at \$10/ft based on total depth or an operator’s blanket bond of \$100,000. If they have posted an operator blanket bond, as part of the annual idle well review the agency determines if additional bond is necessary (in excess of the \$100,000) based on the total footage of

idle wells which have no plans to plug or produce. The additional idle well bond is calculated at \$10/ft based on total depth.

Mechanical integrity requirement(s): MIT required every five years that the well is idle with testing requirements the same as our UIC program.

Provisions for exemptions or exceptions: None.

Orphan wells

Process for prioritizing orphan wells for plugging: The agency prioritizes wells based on environmental or public health/safety risk. Agency natural resources staff and agency management review orphan well list and plan an annual plugging program based on this risk.

The agency may also consider wildlife issues, such as if the wells are in sage grouse core area or wildlife migration routes. If no wells are determined to pose an increased risk to environment/public then remainder of wells are prioritized based on length of time well has been orphan and other wells in geographic area that may be included as part of a bid package for plugging.

ALBERTA

Regulatory Agency

Alberta Energy Regulator

Suite 1000, 250 – 5th Street SW Calgary,
Alberta T2P 0R4
aer.ca

AER can assign care and custody of orphan wells to the Alberta Orphan Well Association (OWA) which is responsible to conduct closure work.

Statutory or Regulatory Authority

Citation: Directive 013: Suspension Requirements for Wells

Last update: December 20, 2016

Substantially Different Definitions

Idle well: Alberta classifies idle wells as “inactive” (no longer active and has not been properly plugged and abandoned) and “suspended” (meeting requirements to leave inactive in perpetuity).

Orphan well: A well, facility, or pipeline in the Licensee Liability Rating program is eligible to be declared an orphan when the licensee of that license becomes insolvent or defunct. Once it determines a party responsible for costs of a well, facility, or pipeline does not exist, cannot be located or does not have the financial means to contribute to those costs, the AER will designate the well, facility, or pipeline as an orphan for all aspects of this program: suspension, abandonment, remediation, and reclamation.

Site restoration: Alberta uses the term “reclamation,” which means: removal or decontamination of equipment or structures; decontamination of land or water; stabilization and contouring of the surface; and any other requirement specified in regulations.

Idle Wells

General requirement(s): There are currently no programs that are only specific to idle (inactive) wells. There are liability management programs that are in place to address a number of issues including inactive infrastructure.

Application fee(s): None.

Financial assurance requirement(s): None.

Mechanical integrity requirement(s): As outlined in Directive 013 for suspension.

Surface equipment requirement(s): As outlined in Directive 013 for suspension.

Other requirement(s): None.

Provisions for exemptions or exceptions: Wells that are excluded from meeting suspension requirements are:

- Wells with a license status of Re-Entry, Abandoned, RecCertified, and RecExempt;
- Observation wells;
- Geothermal wells (used only for HVAC heating purposes);
- Training wells; and
- Farm wells.

Orphan wells

Actions to identify and address orphan wells: The province takes action to identify the possible owner on the occasion of an undocumented well being identified.

Process for prioritizing orphan wells for plugging: The OWA takes a risk informed approach to assessing its inventory and determining the priority actions that need to be taken in order to ensure public safety and environmental protection while efficiently closing the orphan inventory.

BRITISH COLUMBIA

Regulatory Agency

Oil and Gas Commission
PO Box 9331 Stn Prov, Govt.
Victoria, B.C., V8W 9N3
bcogc.ca

Statutory or Regulatory Authority

Citation: Oil and Gas Activities Act: B.C.

Drilling and Production Regulation: B.C. Dormancy and Shutdown Regulation: B.C. Environmental Protection and Management Regulation: B.C.

Last update: May 2019 New regulation – May 2019

Substantially Different Definitions

Idle well:

Inactive well – a well that has had no activity (production, disposal, drilling, completion, or monitoring) for 12 consecutive months.

Suspended well – an inactive well that has been suspended in accordance with regulations. Depending on the well type, this may involve the installation of temporary or permanent plugs and pressure testing.

Abandoned well – a well that has been permanently plugged, cut and capped below the ground surface.

Dormant well – a well that has not met a threshold of activity each year for five or more consecutive calendar years. This definition came into effect in 2019 so wells that had five years of inactivity prior to this were not considered dormant prior to 2019.

Orphan well: The Commission may designate a well and associated operating area as an orphan site if the operator is insolvent or can't be identified or located.

Site restoration: British Columbia describes “restoration” in legislation, though there is no specific definition.

An operator must perform specific obligations upon cancellation or suspension of a permit, including restoration actions that the Commission orders. A site is deemed restored if the site is remediated and reclaimed and is approved by the Commission. A site is remediated once the Commission is satisfied that contamination and residual risks are below the threshold levels.

Idle Wells

General requirement(s): Inactive well suspension requirements.

All wells must be suspended within 60 days of obtaining inactive status. Once suspended, the operator must establish a program of inspections sufficient to ensure the ongoing

integrity of the well and must maintain records of these inspections. The Commission publishes a manual with the following guidance:

- Wells and wellsites must be inspected, wellhead valves must be chained and locked, flow lines must be disconnected and there must be no open-ended lines except for the surface casing vent.
- Medium and high-risk wells including disposal wells, sour gas wells (based on flowrate and H₂S content), wells with a flow rate >1,000,000 cubic feet/day and all wells that have been inactive for 10+ years must have downhole plugs installed (bridge plug or packer and tubing plug). Casing and tubing must be pressure tested as applicable.
- For low risk wells, service and inspect the wellhead and record the casing and tubing pressure as applicable. Wells with no open perforations must be pressure tested.
- All suspended wells must be inspected at least once per year and pressure tests must be completed every three to five years.

Application fee(s): None.

Financial assurance requirement(s): Not specific to individual wells. The Commission has a Liability Management program that considers the assets and liabilities of an operator's permits. If liabilities exceed assets, a security deposit is required. The Commission is also in development of a Permittee Capability Assessment, evaluating permit holders for financial and regulatory risk, that defines future security deposit requirements. Implementation of the PCA is planned for April 1, 2022.

Provisions for exemptions or exceptions: Wells may be exempted from suspension requirements on a case-by-case basis.

Orphan wells

Actions to identify and address orphan wells: A study was conducted in 2011 and 2014 for identification of wells drilled prior to legislative frameworks. Aerial photo analysis and field visits were conducted to identify wells documented in historical records.

Process for prioritizing orphan wells for plugging: The Orphan Site Reclamation Fund is financed by an Orphan Site Restoration Levy which charges an annual levy to each relevant permit holder based on its share of total liability in the province. Orphan wells are prioritized through the Orphan Site Protection and Restoration Plan.

NORTHWEST TERRITORIES

Regulatory Agency

Office of the Regulator of Oil and Gas Operations (OROGO)

orogo.gov.nt.ca

Statutory or Regulatory Authority

Citation: Oil and Gas Operations Act S.N.W.T. 2014, c.14

Last update: 2015 (S.N.W.T. 2019, c.24)

Substantially Different Definitions

Idle well: Well Suspension and Abandonment Guidelines and Interpretation Notes refer to a status of “no production/injection/disposal” or “no use of the well for its original intended purpose.”

Regulations define a suspended well as “a well or part of a well in which drilling, or production operations have temporarily ceased.”

Orphan well: No provincial definition.

Site restoration: OROGO only regulates well abandonment. It does not regulate site restoration and remediation, which is the responsibility of land and water boards established under the Mackenzie Valley Resource Management Act. Therefore, OROGO’s legislation does not define “site restoration.”

Idle Wells

General requirement(s): To suspend or abandon a well, an operator must obtain an Operations Authorization and a Well Approval. On a go-forward basis, OROGO’s policy is that all operators of suspended wells must have an Operations Authorization until the well is fully abandoned (i.e., the Operations Authorization must be in place from drilling to abandonment).

Application fee(s): None.

Financial assurance requirement(s): Not specific to idle wells. OROGO holds Proof of Financial Responsibility (PFR) associated with each Operations Authorization. PFR can be used in specific circumstances to compensate third parties (including government) for loss or damages or costs associated with the cleanup of spills and debris from

operations. Spills are limited to spills of petroleum only. PFR does not cover the cost of abandoning wells without an operator.

Mechanical integrity requirement(s): The operator shall ensure that every well that is suspended or abandoned can be readily located and is left in a condition that (a) provides for the isolation of all oil or gas bearing zones and discrete pressure zones and, in the case of an onshore well, potable water zones, and (b) prevents any formation fluid from flowing through or escaping from the well-bore.

The Guidelines further clarify the mechanical requirements for the suspension of different types of wells.

Surface equipment requirement(s): The Guidelines state that surface equipment must be removed within 12 months of cutting and capping the well.

Other requirement(s): The operator of a suspended well shall ensure that the well is monitored and inspected to maintain its continued integrity and to prevent pollution.

The Guidelines further clarify the expectations for frequency and type of monitoring, based on the risk classification of the well and the suspension methodology used.

Provisions for exemptions or exceptions:

Operators may suggest alternative approaches for the Regulator’s consideration if they meet or exceed the standards set in the Guidelines for the protection of human safety and the environment.

Orphan wells

Actions to identify and address orphan wells:

NWT has no orphan wells.

Process for prioritizing orphan wells for plugging:

N/A

SASKATCHEWAN

Regulatory Agency

Saskatchewan Ministry of Energy and Resources
saskatchewan.ca

Statutory or Regulatory Authority

Citation: Oil and Gas Conservation Regulations, 2012 (OGCR)

Last update: OGCR sections dealing with “end of life” obligations of oil and gas companies regarding wells, facilities and associated flowline will be replaced by new regulations – The Financial Security and Site Closure Regulations in Fall of 2022.

Substantially Different Definitions

Idle well: Saskatchewan has a well completion status of “suspended” which is set by the operator and has no requirements or stipulation as to when it is or can be set other than the well completion cannot be producing or injecting. No volumetric reporting is required on a suspended well.

However, Saskatchewan has defined an Inactive Well. An inactive well is classified as a well that has not reported production, injection, storage injection, or storage recovery within the last 12 months; the well has not been abandoned (cut and capped); and the well does not have a spud date or the spud date is not within the last 12 months.

Orphan well: A well, facility, or associated flowline or site, if the responsible person does not exist. cannot be located or does not have the financial capability to comply with requirements.

Site restoration: reclamation” means the process of:

- Decontaminating, excavating, removing, sequestering, encapsulating, immobilizing, attenuating, degrading, processing or treating the contaminants in the soil or water in a manner so that, in the opinion of the minister, the contaminants no longer pose a threat or risk to human health, public safety, property or the environment; and
- Re-contouring, landscaping, replacing or replenishing the topsoil and re-vegetating the surface of the soil so that it is compatible with its surroundings.

Idle Wells

Provisions for exemptions or exceptions: None.

Orphan wells

Actions to identify and address orphan wells: Through the Licensee Liability Rating Program, ER monitors the financial health of oil and gas licensees. If a licensee is unable to meet its financial obligations related to costs associated with end-of-life obligations, ER may deem wells, facilities and associated pipelines to be orphaned and those would be transferred to the Orphan Well Fund for abandonment and reclamation.

Process for prioritizing orphan wells for plugging:

Established each year through consultations with the Orphan Fund Advisory Committee, which is appointed by the Minister and includes representatives of several industry associations.

YUKON

Regulatory Agency

Yukon Government – Oil and Gas Resources

Suite 400, 211 Main Street,
4th Floor Shopper’s Plaza
Whitehorse, YT Y1A 2B2.
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Statutory or Regulatory Authority

Citation: Yukon Oil and Gas Act

Yukon Oil and Gas Drilling and Production
Regulations

Last update: Yukon Oil and Gas Act, December
2015

Substantially Different Definitions

Idle well: Yukon requires the licensee of a well that has never been completed, or of a well that has not produced or been used for injection in a 12-month period, shall ensure that the well is suspended or abandoned.

Suspended refers to a well for which drilling or production operations have temporarily ceased and which is in such a condition that formation fluid is prevented from flowing through or escaping from the well bore and no pressure is detected at the surface. A completed well that is suspended must have a down-hole mechanical plug and a tubing plug at the surface which are pressure-tested.

Abandoned refers to a well that has been permanently plugged and whose well site has been cleaned up.

Orphan well: No provincial definition. Yukon Oil and Gas Act provides for Chief Operations Officer to order that the well be abandoned at Government expense if the licensee of the well fails meet its obligations, which may result from the licensee being insolvent.

Site restoration: No provincial definition; however, regulations define “clean-up” as removal of all solid and petroleum waste, cleanup of surface, plugging of rat and mouse holes, removal of equipment and materials, and filling of excavations.

Idle Wells

Requirements for approval:

General requirement(s): Wells must be suspended after 12 months or more of no production or injection operations, put back into operation, or abandoned within three years of the date of suspension or otherwise as directed by the Regulator (COO).

A suspended well must be inspected once every 12 months.

Application fee(s): A Well Operation Approval is required for well suspension/abandonment. Application fee is \$500.

Financial assurance requirement(s): Licensee required to submit an updated Corporate Profile every year to the Regulator.

Provisions for exemptions or exceptions: The Chief Operations Officer may approve an extension of length of time for suspension prior to abandonment.

Orphan wells

Process for prioritizing orphan wells for plugging: None.

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REFERENCES

- 1 Interstate Oil and Gas Compact Commission, 1992. *A Study of Idle Oil and Gas Wells in the United States*.
- 2 Interstate Oil and Gas Compact Commission, 1996. *Produce or Plug - The Dilemma Over the Nation's Idle Oil and Gas Wells*.
- 3 Interstate Oil and Gas Compact Commission, 2000. *Produce or Plug: A Study of Idle Oil and Gas Wells*.
- 4 Interstate Oil and Gas Compact Commission, 2008. *Protecting Our Country's Resources: The States' Case – Orphaned Well Plugging Initiative*.
- 5 Interstate Oil and Gas Compact Commission, 2019. *Idle and Orphan Oil and Gas Wells: State and Provincial Regulatory Strategies*.
- 6 Interstate Oil and Gas Compact Commission, 2020. *Idle and Orphan Oil and Gas Wells: State and Provincial Regulatory Strategies, Supplemental Report*.
- 7 Interstate Oil and Gas Compact Commission, 2019. *Summary of State Statutes and Regulations*.
- 8 Interstate Oil and Gas Compact Commission, 2018. *Transfer of Infrastructure and Liabilities - Assessment Criteria and Considerations Toolbox for State and Provincial Regulators*.
- 9 Interstate Oil and Gas Compact Commission, 2019. *Resolution 19.054 Urging the United States Congress to Amend the Oil Pollution Act of 1990 to Provide That Surface Owners and Royalty Interest Owners, Who Have Not Produced or Participated in Ownership of a Well Located on Their Surface Estate, May Not be Considered Responsible Parties by the United States Coast Guard's National Pollution Funds Center When Funds from the Oil Spill Liability Trust Fund Are Spent to Plug the Well*.
- 10 Infrastructure Investment and Jobs Act, Public Law No: 117-58, Section 40601, *Orphaned Well Site Plugging, Remediation, and Restoration*.



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