

# ABANDONED AND ORPHANED WELLS: HOW TO REDUCE RISKS AND MINIMIZE ENVIRONMENTAL IMPACTS



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For more than 100 years, companies and private landowners in the United States have drilled tens of millions of wells to extract oil and gas.<sup>1</sup> When oil and gas wells reach the end of their productive lifespans, the owners and operators of the wells must: (i) plug each one by removing any remaining piping and sealing the well with a mechanical or cement plug; and (ii) reclaim the surrounding land by removing structures and equipment on the surface and

restoring vegetation around the well site to its original condition to prevent impacts to air and water quality. However, for a variety of reasons, this often does not happen, leading to an inordinate number of abandoned and orphaned wells across the United States. These wells pose a potentially significant risk to the environment and the health of neighboring communities and contribute uncontrolled greenhouse gas emissions to the atmosphere.

An abandoned well typically refers to an unproductive well with a known owner and/or operator. An orphaned well, on the other hand, typically refers to a well for which no former owner or operator is known. Simply put, the main difference between the two is that an orphaned well has no responsible operator, leaving the financial responsibility to plug and remediate the wells to local, state, or federal agencies with the costs borne by taxpayers. Whether considered abandoned or orphaned, such wells remain open, uncapped holes in the ground that pose risks to air and water quality.

Abandoned and orphaned wells have been found in a variety of locations, including forests, residential backyards, farm fields, and even under sidewalks and houses. Basically, they are everywhere that oil and gas development has taken place, including at sites of large-scale operations dispersed over many acres and at single-well operations on tiny parcels of land. In 2022, the United States Geological Survey calculated 117,672 wells abandoned and orphaned across 27 states.<sup>2</sup> However, a separate investigation by Reuters estimates the United States could have more than 3.2 million abandoned and orphaned wells.<sup>3</sup>

There are a multitude of concerns associated with these wells, both to human and environmental health. First, abandoned and orphaned wells can leak oil, gas, and other toxic chemicals (including arsenic, benzene, and hydrogen sulfide) into the surrounding air, soil, and groundwater. Most alarmingly, these wells can also emit methane, an odorless gas that can seep into nearby buildings and pose major health hazards. While methane is highly explosive, it can also become concentrated in enclosed spaces and take the place of oxygen in the lungs, leading to weakness, nausea, vomiting, and convulsions. In 2019, fugitive methane emissions from abandoned and orphaned wells had an estimated thermal energy value of 284 kilotons, the equivalent to 7.1 million metric tons of carbon dioxide.<sup>4</sup> Accordingly, these methane emissions are also contributing uncontrolled greenhouse gas emissions to the atmosphere.

It is estimated the median cost of plugging a well without restoring the surface is approximately \$20,000, while plugging *and* reclaiming the surface around the well increases the median cost to \$76,000.<sup>5</sup> But depending on the age of the well and each additional 1,000 feet of well depth, the costs can increase by approximately 20 percent.<sup>6</sup> While owners and operators are legally obligated to plug abandoned wells, the economics of the industry, combined with lax regulation by states, means that few owners and operators have the incentive or the cash on hand to satisfy their obligations.

To ensure that owners and operators properly plug and decommission their wells, states generally require them to post financial assurances for the wells at the time they are drilled. While states may accept a wide range of financial assurances, such as cash, certificates of deposit, or letters of credit, the most common form of financial assurance is a surety bond. The surety bond functions as a type of insurance policy for the state in the event that a well is not properly decommissioned. However, the bonding requirements are often not enforced by states, and in some states, the bonding requirements have not been updated to reflect inflation or increased reclamation costs.

While bonding requirements may minimize the need for state funds to cover the cost of plugging abandoned and orphaned wells, some states have also established orphaned well reclamation funds to cover some costs. Other states also attempt to recover funding through the imposition of drilling permit fees. However, these efforts generally remain underfunded and poorly equipped, and accordingly, the wells remain in place.

Additionally, it is worth mentioning that a number of states allow a private cause of action for an adjoining owner, lessee, or other person likely to be injured by underground waste caused by the failure of an owner or operator to plug a well.<sup>7</sup> After providing notice, the person may enter the land, plug the well, and recover the associated costs against the owner or operator.<sup>8</sup> In a few states, the person may also be entitled to a mechanic's lien on the interest

of the owner, operator, or lessee to secure the costs associated with plugging the well.<sup>9</sup>

In response to the risks posed by the increasing number of abandoned and orphaned wells, the Revive Economic Growth and Reclaim Orphaned Wells Act of 2021 (REGROW Act), was signed into law on November 15, 2021, as part of the Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law.<sup>10</sup> The REGROW Act directed the Secretary of the Interior to establish programs to inventory and properly close orphaned wells and provided \$4.7 billion to the program now known as the Orphaned Well Site Plugging, Remediation, and Restoration Program (Program) for orphaned well site plugging, remediation, and restoration activities on federal, Tribal, state, and private lands.<sup>11</sup> While the US Department of the Interior's Bureau of Land Management leads the Program to remediate orphaned wells on federal lands, this is a multi-agency effort by the US Department of Agriculture, the US Department of Energy, the US Environmental Protection Agency, and the Interstate Oil and Gas Compact Commission.

The IIJA also largely enacted the substance of the Orphaned Well Cleanup and Jobs Act of 2021, which was introduced in the House of Representatives on April 8, 2021. Similar to the IIJA, the Orphaned Well Clean-up and Jobs Act of 2021 creates a program to provide funding to plug orphaned wells and remediate and reclaim orphaned wells on federal land. However, the Orphaned Well Cleanup and Jobs Act of 2021 diverges from the IIJA by requiring operators to pay new fees for idled wells and significantly increased bonding requirements for operation of wells on federal land. Most recently, the Orphaned Well Cleanup and Jobs Act of 2021 was placed on Union Calendar No. 464 on December 15, 2022.

The Abandoned Well Remediation Research and Development Act (AWRRDA) is another piece of legislation introduced in the House of Representatives that seeks further investment in such programs by requiring the US Department of Energy to establish a research, development, and demonstration

program with respect to: (i) data collection on the location of abandoned wells; (ii) the plugging, remediation, reclamation, and repurposing of abandoned wells; and (iii) strategies to mitigate potential environmental impacts of documented and undocumented abandoned wells. Most recently, the AWRRDA was placed on Union Calendar No. 389 on October 7, 2022.

As one of the top crude oil-producing states in the United States, Texas is listed among the 10 states with the highest number of abandoned oil and gas wells.<sup>12</sup> In fact, it is believed that Texas has approximately 7,400 documented abandoned oil and gas wells.<sup>13</sup> The Railroad Commission of Texas (Commission) administers a program to address and plug these wells, which began in the early 1960s when the legislature appropriated limited funds for plugging leaking wells.<sup>14</sup> In 1984, the formal Abandoned Well Plugging Program was established, funded by revenue from the oil and gas industry.<sup>15</sup> Since then, additional revenue has been secured through legislative action.<sup>16</sup> Additionally, the Commission has received federal funds under the IIJA.<sup>17</sup> In August 2022, Texas received \$25 million in initial grant funds and anticipates receiving an additional \$82,563,000 in the first allocation of formula grant funds in 2023.<sup>18</sup> In total, Texas could receive approximately \$318,695,000 in multiple rounds of formula grant funds based on current data estimates, in addition to the \$25 million in initial grant funds, for a total of \$343,695,000.<sup>19</sup> Since the formal Abandoned Well Plugging Program was established in 1984, the Commission has successfully plugged approximately 41,132 orphan wells that were abandoned or orphaned following oil and gas production.<sup>20</sup>

In order to get ahead of potential enforcement action or litigation associated with abandoned or orphaned wells, a responsible party may wish to start identifying abandoned wells that have not been plugged. The responsible party may then approach the governing local, state, or federal agencies to develop a program to address the wells in a systematic way that is acceptable to the applicable agencies. 🚧

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## Notes

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- 10 42 USC § 15907.
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