



Well Construction in Oregon: Challenges and Opportunities

Well Construction in Oregon

There are more than 230,000 wells in Oregon, with approximately 3,000 new wells drilled each year on average. These wells provide a variety of benefits, from domestic drinking water to water for irrigation, cities, nurseries, industry, and other uses. The Water Resources Department is responsible for helping protect these uses and the people, economies, and communities that rely on aquifers to meet their water needs. The Department's Well Construction Program seeks to ensure that well constructors and landowners use proper well construction, maintenance, and abandonment techniques to protect aquifers. To accomplish this, the program administers well construction standards, conducts well inspections, administers well constructor continuing education and licensing, records exempt use wells, and reviews requests for special standards.

Well Construction Program Challenges

In 1989, the Legislature adopted a fee to fund a well construction and inspection program. Almost from the beginning, however, funding has fallen short and the well inspection program has not been fully staffed. The program has typically had funding for 4-6 well inspectors, which is not adequate to oversee the construction of all new wells and address issues posed by old wells. As a result, legacy issues for older wells are addressed on a complaint driven basis, or as well owners seek other approvals from the Department such as new water rights. For new wells, the Department typically only has resources to inspect around 30 percent, which means that deficiencies on uninspected wells are left unaddressed. Last year, of the 948 wells inspected, approximately 12 percent were found to have deficiencies or construction problems.

Issues Resulting from Improper Well Construction

In many areas of the state, aquifers are a shared resource. This means that a well can have impacts on the aquifer, which can negatively impact other wells and users that rely on that aquifer, in some cases threatening public health and safety. A few real examples of how improper well construction can contribute to groundwater problems are included below.

Improperly constructed wells can contribute to groundwater contamination, impacting people that rely on well-water for drinking. In one example, a well was constructed on the property of a gas station and was not properly sealed. The well appeared to serve as a conduit for water contaminated with gasoline to leak into lower aquifers. The contamination spread and affected domestic wells in the community near the gas station. Similarly, in another part of the state, a well was drilled and not sealed deep enough. Eventually, a neighboring city found their well water had been contaminated by a chemical. After investigation, it was believed that the improperly constructed well may have allowed contaminants to move into the aquifer that was the source of water for the city. The city had to abandon the well as a water supply source. Other common violations that can contribute to contamination include constructing a well too close to a septic system or drainfield, and cutting off the casing of a well, which can allow surface contamination to enter the well.

Improperly constructed wells can also lead to groundwater level declines, loss of pressure, and waste. Large portions of the state are underlain by rocks called basalt, which can pose challenging conditions for drilling and properly constructing a well. For example, in the Mosier area, improperly constructed wells have interconnected separate aquifers and, along with pumping, have contributed to groundwater level declines of more than 150 feet. The area has experienced locally dry wells, jeopardizing water supplies for homes and the community. As a result, the Department has established special well construction standards for the area, and the Oregon Legislature has invested \$1 million into fixing or replacing some of the wells.

Need for Improvements to the Well Construction Program

The Department is interested in improving the well construction program to better protect the resource for those that rely on it for their current and future water supply. The need for improvements is outlined in the 2016 Secretary of State Audit, the *2017 Integrated Water Resources Strategy*, and the Department's *2019-2024 Strategic Plan*. Without further investments in the program and policy changes, the Department is unable to ensure that wells are constructed properly. This means that improperly constructed wells, and their contributions to groundwater level declines and local groundwater contamination of aquifers, are likely to continue to be a challenge into the future.

The Well Construction Program has a solid foundation; however, there are several areas in which further policy and resource improvements are necessary in order to protect the resource, well owners, and others. These improvements could include:

- *Increasing the number of wells inspected:* Throughout the trades, work on electrical, plumbing, septic, and building construction requires an inspection before customers are allowed to occupy or use these systems. This is for the protection of both the consumer and public. Currently, wells used for drinking water, livestock, irrigation, and other purposes, do not have a requirement for inspection before use. Inspections are important for identifying deficiencies in construction, yet the Department only has resources to inspect around 30 percent of new wells.
- *Increasing the capacity of the Department to be onsite during well construction and inspecting placement of the seal:* Inspections are most valuable when the inspection is conducted during well seal placement. Proper placement of the seal is important for preventing commingling and contamination. A thorough inspection at the time of placement of the seal can help to identify deficiencies in well construction.
- *Notice of seal placement:* As it is now, with the exception of the special standards for the Mosier Area, the Department receives start cards (notice of intent to construct a well) the day of, or in some cases months before a well is drilled, without information on the date drilling or seal placement begins. This makes it difficult for well inspectors to know when a well is being worked on. Other states require 72 hours of notice, and in the Mosier Area, the Department requires 10 days of notice.
- *Reviewing well logs for technical information:* While the Department reviews all well logs (the record of the water and geologic material encountered during drilling and the well as built) for completeness, it only has the staff capacity to provide a technical review for about 10 percent of new wells. The ability to provide a technical review of all incoming well logs would help the Department identify many of the deficiencies in well construction.
- *Improve well driller knowledge:* Improve well construction through additional training requirements, more robust licensing requirements, required continuing education, and feedback during inspections.
- *Providing funding to incentivize and assist with fixing legacy well construction issues:* Many deficient wells were constructed prior to modern well construction standards, and well owners whose wells are functioning properly may not see the value in repairing or replacing a well that is deficient. Funding to assist well owners with addressing well construction deficiencies, similar to the funding provided in the Mosier area, could help to reduce the burden on well owners.
- *Increasing the installation of measuring tubes:* Measuring tubes allow the Department to more easily take water-level measurements to monitor groundwater levels. This data is essential for groundwater studies and understanding the availability of water.