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WELL SAID NEWSLETTER

Available on the web at
OWRD home page, under
Agency Spotlight >
Well Said Newsletter.

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your organization.

Well Said is a production of
the OWRD Well Construction
& Compliance Section and is
designed to inform the drilling
industry and the public about
program activities and other
items of interest.

Questions or suggestions
about this newsletter may be
directed to Kristopher Byrd
at (503) 991-2470 or email at
Kristopher.R.Byrd@oregon.gov



Serving the public by practicing
and promoting responsible water
management.



MEET SHAUN FINN

Shaun Finn, who began working for the Oregon Water Resources Department (OWRD) in August 2021, is the North Central Region Well Inspector, with responsibilities that include not only well inspections, but also the utilization of geophysical tools for bore-hole data collection in wells around the state.

After growing up in Washington State, Shaun recently married a teacher in Oregon, and in fact, before working with Boise State University in seismic geophysical projects, Shaun was a teacher himself for 6 years. In his spare time, Shaun enjoys reading, hiking, crafting (wood working and cross-stitch), and the playing and programming of computer games.

Shaun says that he really enjoys his inspection work as well as meeting coworkers and drillers from around the state. He also declares that he loves seeing the majestic geography of Oregon, especially as it pertains to his region.

If you see Shaun in the field, please say hello. Shaun would like to ask that drillers please be as accurate as possible with the numbers placed on Start Cards and Well Reports, because you never know when the data provided will prove useful; especially GPS information. For questions, please reach out to Shaun at (541) 969-9896 or Shaun.P.Finn@water.oregon.gov.



HOUSE BILL 2145 UPDATE

January 1, 2022 marked the beginning of a series of updates to the Oregon Well Construction Program as required by House Bill (HB) 2145.

The recent changes include:

- Start Card Fee Increase to \$350.00
- The fee increase contributes to the Department's ability to conduct 100% technical well report reviews and to support current program staffing.
- Well Constructor to submit exempt use map
- Allows for accurate location information, which will increase Department staff efficiency to better serve well owners and well constructors. Please review the Exempt Well Handout for more information.
- Well Constructor to submit \$300.00 recording fee
- Frees up one staff position to transition to other duties to better serve well owners and well constructors and to help implement 100% technical well report reviews required by HB 2145.

With efforts spanning Department-wide to ensure that the required changes would be successfully implemented, the Well Construction & Compliance Section would like to especially thank all members of the Information Services team who effectively transformed the current systems to accommodate all necessary updates to Oregon's Well Construction Program. Please let us know if you have any challenges with the updates made to our systems. Our goal is to make these changes as simple and efficient as possible.

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House Bill HB 2145 Update, cont'd

An additional change slated to occur in 2022 is the Department will be required to conduct a technical review of well reports to assess for deficiencies and compliance with construction standards within 120 days of submittal and share the results of that review with the constructor (effective July 1, 2022).

Looking ahead, below are other changes to the Well Construction Program that are scheduled to take place in **July 2023**:

- **Welding**: requires completion of an arc welding training, professional certification, or proficiency test to obtain a new license. Also allows the Department to require an existing driller to complete an arc welding training, professional certification, or proficiency test, if a welding deficiency is found (effective July 1, 2023).
- Requires Start Cards to be submitted between 60 days to no later than 72 hours **before** work begins on wells. A Start Card expires if work does not begin within **60 days** of submission (provides exceptions to the timeframes in certain situations).
- Requires notification on the day work begins and notification at least 4 hours prior to **seal placement** (if seal placement date is different than on the Start Card).
- Start Card: Requires **GPS** location of the well, proposed construction begin and end dates, with an estimate of the day on which seal placement will occur.
- Well Report: Requires bonded well constructor to identify **helpers** on the well report (any person who assisted with the construction of the well). This will facilitate documentation of experience when a helper is seeking to get a well constructor license.

GET INVOLVED

Interested in helping us implement the bill? You can get involved by:

- Serving on a Rules Advisory Committee
- Participating in workgroups that may be formed
- Submitting comments on possible improvements

For more information, contact Travis Kelly, Well Construction Compliance Coordinator at (503) 302-8618 or Travis.N.Kelly@water.oregon.gov.

WCC STAFF CHANGES

The Well Construction and Compliance (WCC) section would like to congratulate Travis Kelly on his recent promotion to Well Construction Compliance Coordinator. Travis' new role will initially focus on implementing elements of House Bill (HB) 2145 that are directly related to the Well Construction Program.

Another staff change: since bonded well constructors are now responsible for submitting the Exempt Groundwater Use recording fee and map, the former program coordinator, Scott Kudlemyer, has begun to focus his efforts on preparing for the July implementation of the technical well report reviews.

Stay tuned for the next *Well Said* Newsletter for more information about staff duties associated with HB 2145.

LISTEN BEFORE LEAVING



When work on a well is complete and you are ready to leave the site, it is a good idea to take a few moments to **listen** to the well for cascading water, or to utilize a downhole video camera to see if water is leaking in under the casing, or at any other interval in the bore. Often, low yielding aquifers can be missed during the noisy drilling process, but when the machine is shut down and quiet has returned, it's a worthwhile practice to spend a few minutes double checking your work.

If one of these checks ends up revealing a leak and you don't have a camera, then you may contact your regional well inspector, who most likely has a downhole camera available and can help identify where the commingling water is entering the well. If the leak is discovered after you leave the site, then an alteration Start Card must be filed **prior** to any repair work on the well.

Questions about well construction should be directed to Travis Kelly at (503) 302 8618 or Travis.N.Kelly@water.oregon.gov.

GOOD DOCUMENTATION PROTECTS THE DRILLER

When the department provides training associated with the well construction program, staff often emphasize good note taking, whether in regard to a driller's rough log, start times, static water level measurements, or seal material. What seldom gets mentioned in notes, however, is the final height of the casing above land surface, and this is where a picture of the completed well can prove valuable.

Well inspectors will sometimes encounter new wells where the top terminal height of the casing does not meet requirements, and they also find new wells without a well ID number. In some of these cases, the well constructor provides that the well met standards when they left the site. The problem for the inspector, however, is they have no way of verifying this information, and because of this, the driller is asked to return to the site and correct the deficiencies.

Pump installers and landowners will sometimes violate well construction standards by altering wells without a license. In order to eliminate the possibility of being held responsible for work performed by someone else, well constructors are encouraged to take a photo of the completed well before leaving the property.



Good Documentation, cont'd

Specifically, pictures clearly showing the well ID label number attached to the well, along with a wider shot that shows the measurement of the casing height above land surface. These photos may seem like an unnecessary extra step, but when the phone rings and it is the well inspector on the other end, you will be glad that you took the time to record your work.

Questions about well construction requirements should be directed to Travis Kelly at (503) 302-8618 or Travis.N.Kelly@water.oregon.gov.

SOUTH SHORE WELL FIELD SUPPLIES EMERGENCY WATER TO PORTLAND

The benefits of groundwater were once again demonstrated when, following a windstorm that sent a giant evergreen crashing into the Portland Water Bureau's Lusted Hill facility in Gresham, the Columbia South Shore Well Field (CSSWF) came to the rescue by providing safe and reliable drinking water.

The CSSWF, spanning through Portland, Gresham, and Fairview, is the second largest water source in Oregon and can provide 10-102 million gallons a day of drinking water from 26 wells.



Once the repairs to the Lusted Hill facility were completed 36 hours later, Portland was able to switch back to its primary water supply from the Bull Run watershed, which feeds the city water by gravity alone. In a news release, the water bureau stated, "Portland is fortunate to have access to two excellent water sources that meet or surpass all federal and state drinking water regulations."

Questions about the CSSWF should be directed to the Portland Water Bureau at (503) 823-7404.

SOUTHWESTERN OREGON AQUIFER SYSTEMS

Varied, disparate, and complex are just a few descriptors of groundwater systems spread across the state of Oregon; partly attributed to its multi-faceted, violent, and relatively short geologic history. While there are highly productive aquifers in some areas of the state, there also exists large portions of other areas that are left to find groundwater in less-than-ideal systems. As an example, parts of Southwestern Oregon, an area dominated by the accreted terranes (a crust fragment formed on a tectonic plate and “sutured” to crust lying on another plate) of the Klamath Mountains and further punctuated throughout with large granitic intrusions, leaves adequate water supply difficult to find. While the bedrock of SW Oregon is highly diverse in composition, much of it shares a propensity for low-productivity wells (McFarland, 1982).

Unpredictable groundwater supply in Southwestern Oregon is also partly credited to the heat and extreme pressure exerted upon it when successive island arcs (long chains of active volcanoes with intense seismic activity, i.e. the Ring of Fire) were forced on shore over the course of the recent few hundred million years (Irwin & Wooden, 1999). Repetitive collisions coming in from what is now the Pacific Ocean, fundamentally changed the character of the rock. Starting out as sea floor and volcanic island arcs with the ability to hold and transmit water were now being changed into low permeability metamorphic formations. As such, in order to get enough water, many of the wells serving Southwestern Oregon are tapping fractured aquifers in these altered rocks (McFarland, 1982).

The complicated nature of the geology in SW Oregon can make drilling for water in this region very tricky. The hard rock usually requires the use of a hammer bit and its crumbly nature means casing while drilling is almost universal. Additionally, because any groundwater in the Klamath Mountains is held within irregular systems of fractures, finding water in any given borehole is often down to simple luck. While some may argue that surface topography may hold clues to deeper systems of fractures, those with water well drilling expertise understand that there are no guarantees (Kirkpatrick, Heather, Yin, & Harrison, 2020).

A review of the limited studies conducted in the region, along with information collected from well logs, shows that Oregon's fractured systems behave much like systems in more rigorously investigated areas like the Sierra Nevada foothills of Northern California. Data shows that permeability is low, and the total volume of water held within the rock is also likely low. Furthermore, greater depth does not often correlate to higher production (Davis & Turk, 1964). However, to combat low production, many will drill wells hundreds of feet below where water is found—not to increase output—but to add a storage component to the design which is further enhanced by the mild artesian pressure that is common throughout the region.

SW Oregon's complicated geology and fractured aquifer systems make it difficult for well constructors and scientists to estimate the total volume of water available for withdrawal. The current multi-year drought has complicated the issue even further as the reduced precipitation forces aquifer recharge to suffer (Carlowicz, 2021). Finally, as agricultural practices change, rural populations increase, and drought related demands on aquifer systems remain, there will continue to be concerns about the durability of the water supply, and only time will tell if the fractured aquifers of Southwestern Oregon are up to the task.

For questions about this article, contact the SW Region Well Inspector, Ben Thorpe, at (541) 770-3412 or Benjamin.D.Thorpe@water.oregon.gov.

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PHOTOS FROM THE FIELD



Improperly protected monitoring well



Landowner-constructed well without a permit



Flowing artesian well



Water supply well to be abandoned



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