



State of Utah

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DIVISION OF DRINKING WATER  
Marie E. Owens, P.E.  
*Director*

September 29, 2020

Rodger Smith  
Highland Subdivision Water System  
5880 North Highland Drive  
Mountain Green, Utah 84050

Subject: **Temporary Operating Permit**, Highlands Well #1(WS005);  
Highland Subdivision, System #15005, File #7100

**This Temporary Operating Permit Expires October 31, 2023.**

Dear Mr. Smith:

The Division of Drinking Water (the Division) received your request for an Operating Permit for Highlands Well #1(WS005), formerly known as the Johnson Well No. 1, from you on September 21, 2020. This project has met all conditions for receiving an operating permit.

The history of the Highlands Well #1(WS005) Division's review is described below:

- The Division issued plan approval for well drilling for the Highlands Well #1(identified as WS005 in the Division's inventory database) on April 18, 2007.
- The Division issued the original well equipping approval for Highlands Well #1(WS005) on June 16, 2015. The approved design in 2015 included a gas chlorinator in the well house.
- The Division issued Amended Plan Approval for the equipping of Highlands Well #1(WS005) on July 5, 2017. The proposed design submitted to the Division in 2017 did not include a gas chlorinator.
- The Division issued a Plan Approval Extension on July 5, 2018 for one year.
- In July 2019, Highland Subdivision water system requested and was granted a second extension of the Highlands Well #1(WS005) Plan Approval for one year. The second extension included documentation, that due to the time lapse of the original approval in 2015, the Division may need to re-evaluate the well's safe yield and approved capacity.
- An Operating Permit was requested on July 21, 2020.
- Division staff conducted a final inspection of this project on August 4, 2020.
  - The site inspection identified the following items that the Division needed further information before issuance of an Operating Permit for the Highlands Well #1(WS005) :

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- Documentation showing the Johnson Well No. 1 (Highlands Well #1) is clear of litigation
- Additional documentation detailing the SCADA set points and what controls will be defined to control the function of the Highlands Well #1(WS005).
- Emails from Marjalee Smith, a representative from the water system, Kent Wilkerson, the water system's engineer, and Wendy Crowther, the water system's legal representative, provided the additional clarification on the operations of the Highlands Well #1(WS005). Items discussed including the existing system pressure controls/alarms and documentation on the litigation as of August 12, 2020.
- The operating permit request included a name change request from the previously known Johnson Well No. 1 to Highlands Well #1 (WS005).
- A Temporary Operating Permit was issued on August 24, 2020 to allow for the use of the well while the remaining items of the SCADA were installed at the Gordon Creek 250k (ST003) and Gordon Creek 700k (ST004) storage tanks.

The Division's understanding of the Highlands Well #1(WS005) project was for the water system to develop a third ground water source to supplement their spring flows and allow for more development within the water system service area.

Highlands Well #1 (WS005) was equipped with the following:

- A variable frequency drive (VFD) 40-horsepower (HP) submersible Grundfos pump (model #475s400-4) with the pump capacity set to 265 gallons per minute (gpm).
  - The equipped maximum well pump capacity of Highlands Well #1 (WS005) is 475 gallons per minute (gpm).
  - However, since the well pumps directly to the distribution Zone 1, the pump rate was limited to 265 gpm to provide a maximum pressure increase of 10 psi in the current Zone 1 pressure zone.
  - This increases the Zone 1 pressure to approximately 128 to 132 psi at the well and is sufficient to close the three pressure reducing valves (PRVs) that feed spring source water (WS002 and WS003) to the zone.
- The Highlands Well #1 (WS005) will begin operating when there is drop in the Gordon Creek 250k (ST003) and Gordon Creek 700k (ST004) storage tanks below a set point.
  - The set point of the volume drop in the tanks was a combined 225,000 gallons or 24% drop in the tanks volumes, as the two Gordon Creek tanks are hydraulically connected.
  - The operations of the Highlands Well #1(WS005) was controlled manually until the SCADA was installed across the system. The programed alarms will control the Highlands Well #1.
  - SCADA was installed at the tanks and PRVs throughout the system and repeaters were placed at the Highlands offices so that operational staff can verify all system parameters.

The safe yield of the Highlands Well #1(WS005) is rated at 1,400 gpm, which is calculated based on two-thirds of the constant-rate aquifer drawdown test results at 2,150gpm.

- In this case, even though this well's safe yield is calculated to be 1,400 gpm, the equipped pump capacity is limited to that of 265 gpm, which is the physical limiting factor of well capacity.

- In addition, the Drinking Water Source Protection (DWSP) plan considered a maximum pump rate of 500 gpm.
- The maximum pump rate of 265 gpm is the basis for determining the maximum number of connections that Highlands Well #1 (WS005) can serve.

In the future, if Highland Subdivision **wishes to increase the pump rate** of the Highlands Well #1 (WS005), the Land Use Agreement issue resulting in the **DWSP plan maximum pump rate limitation needs to be rectified and an amended Operating Permit must be requested.**

The Highlands Well #1(WS005) will be able to provide sufficient source for the Zone 1 portion of the water system, approximately one third of the system users. Zone 1 also includes the water system's heavy users such as the local church building and cemetery, which have a high outdoor demand water use. The addition of the Highlands Well #1(WS005) was added to the Highland Subdivision's capacity investigation currently under review, see Division file #12203.

The Highlands Well #1 (WS005) does not currently include a chlorinator. Highlands Subdivision provides chlorination for the Gordon Creek Springs (WS002 and WS003). The new source chemistry analysis of the Highlands Well #1 (WS005) did not show any exceedance in any water quality parameters. The Division is currently completing a source water quality review to determine if primary and secondary disinfection is required for the Gordon Creek Springs (WS002 and WS003). The results of this study will also determine if Highland Subdivision will be required to provide secondary disinfection throughout their distribution system. A chlorinator booster facility would need to be installed at the Highlands Well #1 in the event the source water quality review finds that Highland Subdivision is required to provide secondary disinfection throughout their system.

The Highland Subdivision stated that when the Highlands Well #1 (WS005) is expected to be dormant for a sustained amount of time, the water system will flush Zone 1 with chlorinated water from the Springs (WS002 and WS003) until a residual is detected at the dead ends of Zone 1 to ensure that said pressure zone is fully chlorinated again.

We have received the following information for the Highlands Well #1(WS005) project:

1. Certification of Rule Conformance with plan approval conditions by a professional engineer and changes made during construction were in conformance with rules R309-500 through 550.
2. As-built or record drawings.
3. Satisfactory bacteriological results as evidence of proper disinfection and flushing.
4. Evidence of O&M manual delivery.
5. Attorney Wendy Crowther's update on pending litigation regarding the Johnson Well No. 1.
6. Photo documentation of the SCADA installation at both the well and tanks.

We have determined that all conditions for issuing an Operating Permit have been met. On this basis, a **Temporary Operating Permit for the Highlands Well #1 is hereby issued as constituted by this letter contingent upon your compliance with the following condition(s):**

- **Completion and delivery of results to the Division of the following studies on Gordon Creek Spring 2 (WS002) and Gordon Creek Spring 7 (WS003):**
  - **the Division's Source Water Quality review and**
  - **the previously required Corrosion Control study**

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The results of both of these studies are required for the Division to be able to adequately determine:

- The blending of the Highlands Well #1 (WS005) with Gordon Creek Spring 2 (WS002) and Gordon Creek Spring 7 (WS003) possess no health risk to the public and
- If secondary disinfection will be required for the Highlands Subdivision.
  - A chlorinator booster facility would need to be installed at the Highlands Well #1 before a permanent operating permit for Highlands Well #1 could be issued in the event the source water quality review finds that Highland Subdivision is required to provide secondary disinfection throughout their system.

The issuance of the temporary operating permit will place a dormant deficiency S001, unapproved source in service. This item will have notes stating that the facility has an approved temporary operating permit and the System must obtain a permanent operating permit by December 31, 2023.

Failure to submit the additional information stipulated in above condition of this temporary operating permit along with a request for a permanent operating permit before December 31, 2023 will result in this dormant deficiency being activated and 200 IPS points will be assessed at that point in time.

Please maintain a copy of this letter with your permanent records for future reference.

If you have any questions regarding this Operating Permit, please contact Cheryl Parker, of this office, at (385) 271-7039, or Michael Newberry, Engineering Manager, at (385) 515-1464.

Sincerely,



Nathan Lunstad, P.E.  
Assistant Director

CP/mnn/mrn/nl/as/mdb

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