



Northwest Groundwater
Consultants, LLC

November 5, 2021

Project No. 01200-01

Mr. Cory Yost
Yost Gallagher Construction
1803 E Springfield
Spokane, WA 99202

Subject: Groundwater Quantity Report, Coolin Property, Bonner County, Idaho

Dear Mr. Yost:

Northwest Groundwater Consultants, LLC (NWGC) has prepared this Groundwater Quantity Report in support of proposed development (the "Site") in Bonner County. NWGC understands that the property will be subdivided into ten lots that range in size from 0.92 to 1.19 acres.

The objective of this Report is to provide *"how the aquifer proposed for water supply has sufficient production capability to provide drinking water to all applicable lots and that a location is available within each lot for installation of a well without conflicting with proposed sewage systems on or adjacent to the proposed lot"* as required by the Bonner County Land Use Regulations Section 12-623.B.1.

This report evaluates the likelihood that new wells will provide sufficient water. This assessment relies on publicly available information including but not limited, well driller reports, water right reports, topographic and geologic maps, soil survey, county assessor records, etc.

SITE AND VICINITY CONDITIONS

The Site is located just north of Coolin, Idaho along Sherwood Beach Road on the east side of Priest Lake and is situated in a portion of the north half (N ½) of the northwest quarter (NW ¼) of Section 10 (Government Lot 1, Township 59 North, Range 4 West, Boise Meridian in Bonner County, Idaho. The Site consists of Bonner County Parcel No. RP59N04W102400A and is approximately 38.3 acres (Figure 1; Attachment A).

According to the U.S. Geologic Survey (USGS) 7.5-minute topographic map of the Coolin, Idaho Quadrangle (USGS, 2017), the overall Site elevation ranges from approximately 2,480 to 2,560 feet above mean sea level (amsl). The Site consists of a relatively steep slope along its west border and then occupies relatively flat ground to the east. The Site is currently forested.

Mean annual precipitation at the Site is approximately 31.5 inches per year based on the 30-year period from 1981 to 2010 (WRCC, 2021). Precipitation depth and intensity for the



25-year, 24-hour storm event is approximately 3.0 inches and 0.125 inches per hour, respectively, (NOAA, 1973)

GEOLOGY AND HYDROGEOLOGY

The geologic interpretation of the Site and the surrounding area is based on the Geologic Map of the Sandpoint 30' X 60' Quadrangle, Idaho and Montana, and the Idaho Part of the Chewelah 30' x 60' Quadrangle (Lewis and others, 2020). Generally, geologic mapping shows that the Site contains the Pleistocene-age undivided deposits of outwash gravel. These deposits typically consist of unsorted to moderately sorted, sandy pebble to boulder gravel comprised of rounded to subrounded granitic and intrusive clasts and subrounded to subangular Belt Supergroup clasts. Deposits are moderately to coarsely stratified and locally interbedded with silt and clay. The glacial deposits form a terrace along the west portion of the Site.

Surface soils include silt loams and gravelly silt loams of the Pend Oreille and Vay-Ardtoo series with thicknesses as much as 33 feet. Basement rock consists of argillite and siltites, of the Prichard Formation within the Belt Supergroup (Lewis and Others, 2020).

The aquifer in the area containing the Site is comprised of unconsolidated sediments. Further, the bedrock topography bounds the aquifer to the east and to the southwest. and the aquifer appears to be hydraulically connected to Priest Lake to the west. Water level elevations in wells are generally above the water surface elevation of Priest Lake (2,439 feet) at summer pool. Groundwater is inferred to flow towards Priest Lake.

WATER WELL INVENTORY

A review of well driller's reports obtained from the Idaho Department of Water Resources (IDWR) online well log database indicates that wells in the surrounding area are typically completed in "sand and gravel or gravel" (i.e., alluvium). Water wells that were locatable approximately ½ mile of the Site are shown in Figure 1. Table 1 presents a summary of water wells identified in the IDWR database and the corresponding well driller's reports are included in Attachment A. Wells were located through review of well driller reports and/or water rights records. Not all wells identified in the IDWR database were locatable.

As indicated in Table 1, most wells are completed in sand and/or gravel. Static water levels (SWL)¹ in the wells completed in sand and/or gravel ranged from -3 feet above ground surface (artesian flow) to 100 feet below ground surface (bgs) with an average SWL of 47

¹ Static water levels were reported on the well driller reports and represent water levels measured at the time of drilling.



feet bgs and groundwater elevations ranged from 2,452 to 2,534 feet. Reported yields² ranged from 5 to 50 gallons per minute (gpm) with an average yield of 13 gpm. Potential available drawdown (total depth minus SWL) for wells completed in these deposits ranged from 15 to 105 feet with an average of 38 feet.

Wells closest to the Site (Map IDs G, H, I, L and M – Figure 1) range in depth from 58 to 78 feet with SWLs ranging from 1 to 10 feet bgs. Reported yields in these wells range from 5 to 50 gpm (four of the wells were 25 gpm or greater) (Figure 2; Table 1). Comparison of SWLs the depths in which water was encountered suggest that the aquifer is at confined in this area. Further, each of these wells were tested at their reported yields for 1 hour.

Given that the proposed lots are approximately 100 feet higher in elevation, future wells for the site may need to be drilled to about 160 to 180 feet deep in order to be completed in the aquifer. Given the ranges of well yields for wells closest to the Site, it is reasonable to conclude that future wells located on the Site will provide sufficient quantities of water. Further, the proposed lots are large enough to accommodate the required setbacks from proposed drainfields.

CONCLUSIONS AND RECOMMENDATIONS

Based on the review of available information and the lines of evidence presented above, it is likely that an individual well located on each of the ten proposed lots will be capable of producing sufficient flow and volume of water. As a comparison, Kootenai County requires a minimum of 1,500 gallons per day (gpd) with a minimum flow of 5 gpm for 4 hours per residence without negatively affecting nearby property owners if no more than one-half (½) acre of each lot is irrigated³. Given the higher well yields of most nearby wells, there appears to be an adequate groundwater supply.

Although the opinions presented in this assessment are based on publicly available information, only the drilling and pump testing of a well or wells can confirm the actual amount of available groundwater and impacts to nearby wells, if any. In the event of a low producing well or wells, storage may be needed.

² Based on well tests at time of drilling and may not be indicative of long-term production

³ Kootenai County Land Use and Development Code (October 22, 2019) Article 6.3 – Minor Subdivisions, Subsection 8.6.302.B.8.e



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If you have any questions, or wish to discuss any items further, please do not hesitate to contact me at (208) 755-1094.

Sincerely,

11/5/2021

Thomas F. Mullen, PG
Principal Hydrogeologist

Attachments:

- Limitations
- References
- Table
- Figures
- Attachment A – Project Drawing
- Attachment B - Well Driller Reports

LIMITATIONS

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

REFERENCES

- Lewis, R.S., Burmester, R.F., Breckenridge, M.D., and Phillips, W.M., 2020. Geologic Map of the Sandpoint 30' x 60' Quadrangle, Idaho and Montana, and the Idaho Part of the Chewelah 30' x 60' Quadrangle: Idaho Geological Survey Digital Web Map 189, scale 1:100,000.
- U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), 1973. NOAA Atlas 2, Precipitation-Frequency Atlas of the Western United States, Volume 5, Idaho.
- Western Regional Climate Center (WRCC), 2021. Priest River Exp Stn, Idaho (107386) 1981-2010 Monthly Climate Summary: <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?id7386>