



ENVIRONMENTAL MANAGEMENT & CONSULTING ENGINEERING

January 21, 2008

027-30098-00

Mr. Steve Cordes
Welch Comer & Associates, Inc.
350 Kathleen Ave.
Coeur d'Alene, ID 83815

RECEIVED
MAY 15 2008
IDWR/North

Subject: Well Site Reconnaissance for a New Water Supply Well at Heyburn State Park, Benewah County, Idaho.

Dear Steve,

LFR Inc. (LFR) is pleased to present Welch Comer & Associates, Inc. (Welch Comer) this letter report summarizing the findings of the well site reconnaissance of a new water supply well at the Heyburn State Park in Benewah County, Idaho.

BACKGROUND

LFR understands that a current well in Heyburn State Park was recently tested for the microparticulate analysis (MPA) by the Idaho Department of Environmental Quality (IDEQ) and that the analysis came back positive. IDEQ in turn determined that the water source was groundwater under the direct influence of surface water (GWUDI). LFR further understands that one of the options under consideration in mitigating this issue is to locate and drill a new water supply well. Based on this information, LFR has completed the following tasks in support of recommending a candidate site to drill and install a new water supply well: (1) Well Records Review, (2) Well Site Reconnaissance, and (3) Preliminary Hydrogeologic Evaluation.

Well Records Review

A review of well driller reports indicated that wells in the surrounding area (i.e., within the park) were typically completed in basalt bedrock. Static water¹ levels in the wells completed in bedrock ranged from 0 to 82 feet below ground surface (bgs) and reported yields ranging from 40 to 300 gallons per minute (gpm). Three of the wells located within the park boundary have since been abandoned. These wells include those located in Section 6, Township 46 North, Range 3 West, Boise Meridian (B.M.) (one well) and in Section 8, Township 46 North, Range 3 West, B.M. (two wells). A summary of the well records review is presented in Table 1 and the respective well driller reports (i.e., well logs) filed with IDWR are presented in Appendix A.

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



Well Reconnaissance

A well reconnaissance was conducted in the field to establish the locations and elevations of wells in the area, as practical and to select a suitable site for the location of a replacement well. The well reconnaissance was conducted on January 11, 2007 and was attended by Mr. Ron Hise, Heyburn State Park, Mr. Tom Joyner, Idaho Department of Parks and Recreation, and Mr. Tom Mullen, LFR. The well reconnaissance included locating in the field the two existing wells, the park water tank, a candidate well site, an abandoned cistern, and the suspected well location of the abandoned well in Section 6 described above and in Table 1. Each of these locations were recorded using a hand-held GPS. The locations are presented in Figure 1.

Preliminary Hydrogeologic Evaluation

General geologic information for the park and the surrounding area was obtained from the *Digital Geologic Map of the St. Maries 30x60 Quadrangle* (Figure 2). Generally, the geologic mapping shows the park to be underlain by Miocene-age members of the Columbia River Basalt Group² including the Priest Rapids Member of the Wanupum Formation (Tpr), the Dodge Basalt of the Eckler Mountain Member of the Wanupum Formation (Ted), and the Grande Ronde Formation (Tgn2). Miocene unconsolidated sediments (Ts) overlie the basalts in the highlands and Quaternary landslide/alluvium deposits (Qls/Qal) overlie the basalts in the lower elevations. Middle Proterozoic Revett and Burke Formations (Yrb) outcrop in the north portion of the park and comprise much of the highlands.

Groundwater in the bedrock is typically present in faults, fractures, and interbeds. Recharge to the bedrock aquifer is primarily through direct infiltration of precipitation into the subsurface. The major groundwater recharge period typically follows spring snowmelt. Additional recharge also occurs in the bedrock fractures in the form of base flow originating from the nearby highlands.

The park's two wells penetrate the alluvial/landslide deposits and appear to be completed in the underlying Grande Ronde Formation. Because their locations are close to Plummer Creek, which is superimposed onto alluvial deposits overlying the basalt formation, recharge from the creek through the underlying sediments and into the underlying basalt formation is the most probable route of surface water contamination that was recently detected in the park's current well.

Well Site Recommendation

A new well site was identified in the field during the site reconnaissance. This site is approximately 385 feet northeast of the existing water tank and at an approximate elevation of 2275 feet. The well would be completed in the fractures or interbeds of the underlying basalts as

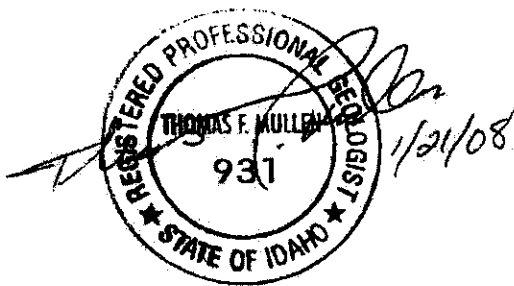
² Lewis, R. S., R.F. Burmester, R.M. Breckenridge, M.D. McFadden, and J.D. Kauffman, 2002. *Geologic Map of the St. Maries 30 x 60 Minute Quadrangle, Idaho: Geologic Map 28*, Idaho Geological Survey, Moscow, Idaho.



they would have the highest probability of supplying sufficient quantities of water. The location is also approximately 580 feet from Coeur d'Alene Lake. Although this distance is beyond the 500-foot distance in which groundwater would be considered under the influence of surface water by IDEQ, LFR recommends that a microparticulate analysis (MPA) test be performed in conjunction with the required water quality sampling if and when a new well is completed.

If you have any questions regarding this letter report or if we can be of assistance in any manner, please feel free to contact me at (509) 535-7225.

Sincerely,



Thomas F. Mullen, P.G.
Senior Hydrogeologist

Attachments

- Table 1 - Well Driller Reports Summary
- Figure 1 - Well Location Map
- Figure 2 - Geology Map
- Appendix A - Well Driller Reports