



1201 Oak Ridge Dr., Suite 250
Ft. Collins, CO 80525

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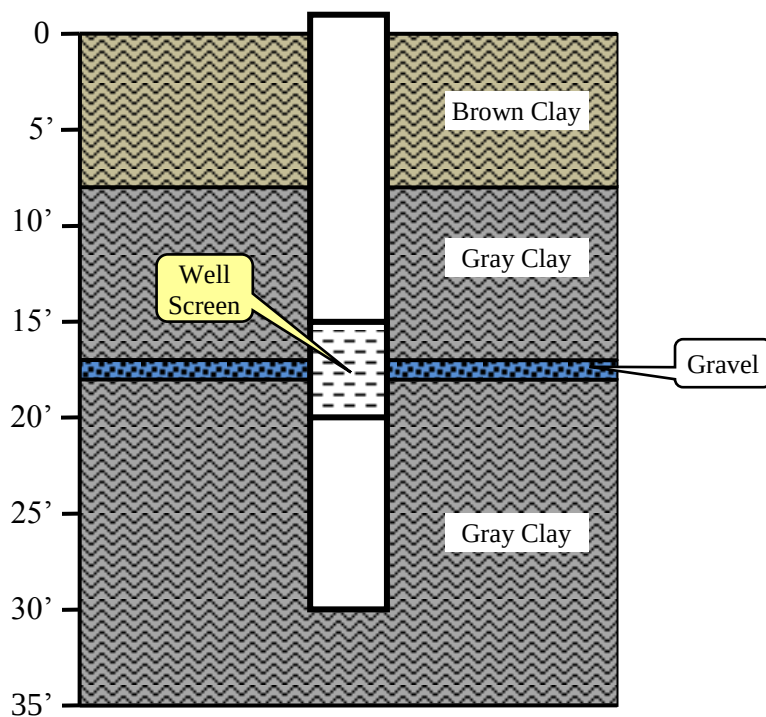
Larry Martin
Hydrogeologist
970-225-3515

Water Supply Well at Ozette, Olympic National Park

The existing National Park Service well at Ozette was constructed in June 1980. The well was drilled to a total depth of 35 feet. It is quite likely that the vast majority of water for the well is obtained from a gravel layer at 17-18 feet below ground surface. The well is less than 100 feet from the Ozette River. The drillers log for the well shows;

0-8 feet	Brown clay
8-17 feet	Gray clay
17-18 feet	Gray gravel and fine silt
18-35 feet	Gray clay

The well was completed with plain casing from 0-15 feet, well screen from 15-20 feet, and plain casing from 20-30 feet. A copy of the well completion report and drawing of the well construction are attached to this report. The well will produce 10 gpm with 5 feet of drawdown.



Schematic drawing of the existing NPS well at Ozette.

Water well completion reports are accessible from the Washington Department of Ecology. The only other well records for the Ozette area are for a private parcel (Rob Snyder) about a half mile east of the NPS well. Snyder drilled two dry holes on his property in 1995. The drillers log shows that these wells were probably drilled into glacial deposits containing a considerable amount of clay. The third well produces about 1 gpm. These results are indicative of the probable poor water production to be expected from wells constructed into glacial deposits in the area.



A portion of the Cape Flattery 1:100,000 geologic map by Henry Schasse (2003).

The entire developed and previously disturbed NPS areas at Ozette are underlain by alluvium (Qa, shaded yellow). Alluvium is usually mostly sand and gravel that has been deposited by running water in association with streams and rivers. The running water generally carries away most of the fine-grained portion of the sediment, leaving a permeable deposit of sand and gravel that is a good target for well drilling. The well log for the existing NPS well shows that it encountered mostly clay, with only one small gravel bed. The other nearby geologic units, Qgt and Qgd, are glacial deposits composed of the unsorted sediments left after the glaciers melted. Glacial deposits generally retain a significant amount of silt and clay sediments mixed with the coarser sediments, resulting in lower permeability and lower yield to wells.

Alluvium at Ozette overlies unsorted glacial deposits. The geologic log for the existing well at Ozette shows “gray clay” from 18-35 feet below ground surface. The gray clay is probably the top of the glacial deposits. If that is the case, then drilling deeper will probably not encounter additional water-bearing zones. Given the fairly small size of Coal Creek at Ozette, we might expect that the thickness of the alluvium associated with the creek would be no more than 20 feet deep.

There are concerns that the shallow depth of the existing NPS well and its proximity to the Ozette River will cause it to be classified as “groundwater under the direct influence of surface water” (GUDISW). If that were to happen, then the water from the well would need to be treated as if it were from a surface source. Requiring additional treatment and testing. NPS would like to avoid the additional expense associated with treatment and testing of water classified as GUDISW if possible. The easiest solution is to construct a new, deeper well, farther from the river. There is a location where a test well could be constructed (shown on the attached map) where the well would be located more than 200 feet from either the Ozette River or Coal Creek. However, the preceding discussion should make it obvious that it’s likely that a well anywhere at Ozette will probably be shallow.

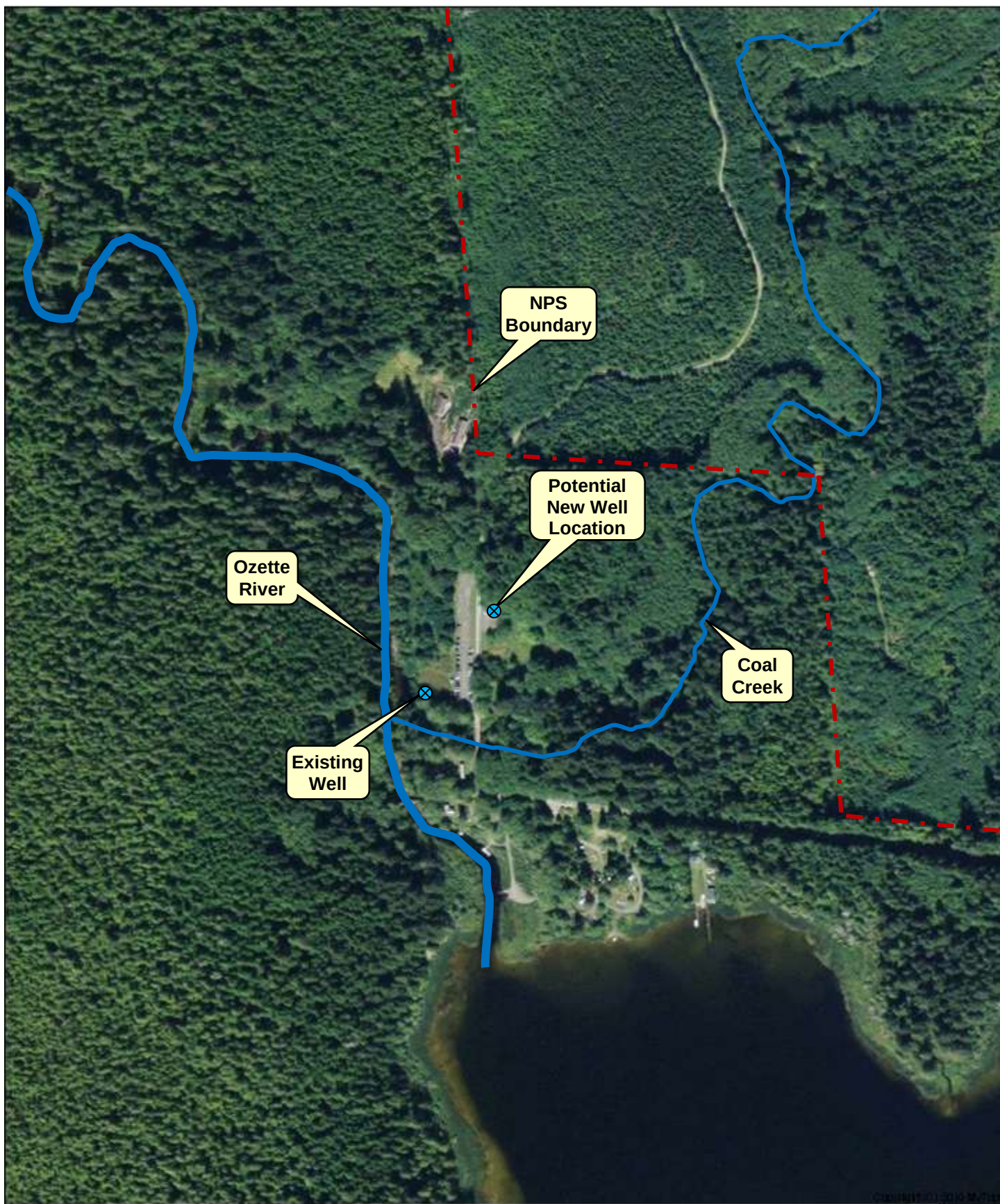
It is my understanding from discussions with Regina Grimm (regional engineer for WA-DOH) that both criteria are needed to classify a source as a "potential GWUDISW". That is, the well must be less than 200 feet from a surface-water source and the depth to the perforated or screened interval must be less than 50 feet. The assumption is that deeper wells and longer distances provide adequate protection. At Ozette, we have two alternatives for addressing the issue of “groundwater under the direct influence of surface water”; test the existing well or construct a new well.

The simplest and least expensive (and lowest risk because we already know the well is a reliable source) route is to conduct the required testing on the existing well and determine whether it will be classified as groundwater or GWUDISW. In many cases, the determination is “groundwater in hydraulic connection to surface water” and disinfection is the only required treatment (NPS already routinely disinfects all drinking water systems by chlorination).

The second alternative is to construct a new well at a gravel parking area on the east side of the road as shown on the attached map. The location is more than 200 feet from the Ozette River and Coal Creek, so there should be no issue regarding potential GWUDISW. However, there is considerable risk that a well at this location might not produce an adequate supply of water. We simply wouldn’t know that until a test well was drilled.

Summary

The existing NPS well at Ozette may need to be tested to determine whether it is hydraulically connected with surface water from the adjacent Ozette River. If it is, it may require additional treatment. Alternatively, a new well could be constructed at a site that is more than 200 feet from surface water sources. However, the hydrogeology of the area is not favorable to construction of wells. There is no way to know whether a new well could provide an adequate supply of water, or whether the water quality would be suitable, without constructing a test well.



SCALE 1:6000
0 100 200 300 400 500
FEET

Current and proposed locations for water supply wells at Lake Ozette

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

Application No. _____
Permit No. _____

NY 050-1-20