WSI Weiland, Inc.
Environmental & Engineering

9/27/2023

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1313 Sherman St., Room 215
Denver, Colorado 80202

Re: Goose Haven Reservoir M-2010-071, Technical Revision-2, Update to Groundwater Model Based on Monitor Wells P-11, P-12, P-13.

Patrick,

For the purpose of satisfying condition #2 of the January 19th AM-2 approval letter, I have prepared this letter report regarding updating of the Groundwater Model (GWM) based on new information collected from installation of monitor wells P-11, P-12 and P-13.

On June 8, 2023 three monitor wells were completed at the locations shown in Sheet GW-3 of the *Goose Haven Reservoir Expansion Groundwater Modeling Report*, *January 13, 2023*. Subsequently, the completed GWS-31 forms were submitted to the division and condition #1 of the January 19th approval letter was satisfied.

The Geologic Drill logs listed on the GWS-31 forms were analyzed for consistency with the GWM as follows; each well was surveyed with a high precision GPS to determine the precise surface elevation of the wells. Absolute bedrock elevation was then determined by subtracting depth data from the drill logs. The bedrock elevation points were plotted on the working surface model previously used to import bedrock surface elevations into the GWM. The elevations of the bedrock surface model at the locations of the new wells were extracted and compared to the actual elevations from the drill holes (see Table 1).

Table 1 Modeled Bedrock Surface Comparison with Geologic Log Elevations.

WELL	MODELED SURFACE BEDROCK ELEV	GEOLOGIC LOG BEDROCK ELEV.	DELTA
P-11	5069.44	5070.25	-0.81
P-12	5064.59	5064.36	0.23
P-13	5042.81	5042.38	0.43

Since the delta between measured and modeled is so low between modeled and observed at those locations and well within the accuracy of all of the other bedrock surface data points used to develop the model, an update to the bedrock elevation surface component of the GWM is not warranted.

The Geologic Drill Logs were also analyzed for consistency with the areas of hydraulic conductivity defined in the GWM based on the consistency of the unconsolidated sediments. All of unconsolidated sediments identified in the new Geologic Drill Logs showed consistency with sediments used to establish the zones of hydraulic conductivity assigned to the GWM. An update to the zones of hydraulic conductivity component of the GWM is therefore also not warranted.

In summary the new information collected from installation of monitor wells P-11, P-12 and P-13 supports the accuracy of the existing GWM previously developed for the site.

Sincerely

Peter Wayland
President