



Memo

Date: Monday, September 11, 2023

Project: Perpetua Resources Idaho, Inc.

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Subject: Expert Report for Water Right Applications for Permit 65-24089, 77-14377, 77-14378, 77-14379, 77-14381, Applications for Transfers 85396 (77-7122), 85397 (77-7285), 85398 (77-7293), and 85399 (77-7141), and Application for Exchange 85538 (77-7293)

This expert report documents the process used to prepare the water right applications submitted by Perpetua Resources in 2021 for the Stibnite Gold Project. Decisions that influenced either preparation of the applications or future use of the proposed water rights are detailed. All documents listed or described in the report are available in the Idaho Department of Water Resources (IDWR) online files.

Water Right Application Preparation Procedure

The following steps were used in developing the water right applications.

1. Develop estimates of water needs for the project. The site-wide water balance was used to predict monthly non-potable water needs by mine year for a variety of climatic conditions. These predictions were used to determine water right appropriation needs by comparing the existing water right portfolio to predicted water needs for the project. A draft technical memorandum dated May 7, 2021 (Attachment 1 to Application 77-14378) provides a detailed description of non-potable water need projections.

Water needs for potable water systems (worker housing, mill/truck shop, road maintenance facility, and logistic facility) were determined based on population served and typical flow rates required for similar facilities.

2. Compile and review existing water rights appurtenant to the Stibnite Gold Project lands. The existing water right portfolio available for use at the Stibnite Gold Project included the following licensed or decreed water rights:



- a. 77-7122 is a decree authorizing diversion of 0.33 cfs from East Fork South Fork Salmon River (EFSFSR) diversion to storage with an annual volume limit of 7.1 acre feet.
- b. 77-7285 is a license authorizing diversion of 0.50 cfs from groundwater for mining and diversion to storage uses with an annual volume limit of 30.5 acre feet.
- c. 77-7293 is a license authorizing diversion of 0.25 cfs from an unnamed stream (aka Hennessy Creek) for mining and diversion to storage uses with an annual volume limit of 20 acre feet.
- d. 77-7141 is a decree authorizing diversion of 0.20 cfs from groundwater for domestic purposes with an annual volume limit of 11.4 acre feet.

In combination, the existing portfolio provides a total annual volume of 57.6 acre feet for non-potable mining purposes. This quantity is less than 3 percent of the estimated average annual diversion demand predicted in the May 7, 2021 draft technical memorandum.

3. Prepare appropriate applications. Water right applications were developed to meet project needs. The applications seek to fully utilize existing water rights and appropriate additional water to meet remaining project needs. All identified sources of water (supply wells, dewatering wells, underdrains, contact water storage ponds, surface water pump station) are listed on the appropriate applications. The place of use for industrial and mining purposes encompasses the entire mine site.

Significant Pre-Application Decisions

The following decisions were made during application preparation that influenced the water right applications.

1. Runoff (stormwater from project facilities that does not enter a natural watercourse) was listed as a water source for sake of application clarity and completeness. It was recognized that (1) a water right is not needed for collection of runoff, (2) capture of runoff is required for water quality protection purpose, and (3) captured runoff could be a significant water supply component for the project.
2. Dewatering wells were included as points of diversion and all flows from dewatering wells are included within water right diversion rate, even if water is discharged back to the stream.



3. Water discharged from the mill to the tailings storage facility (TSF) as slurry is wastewater that does not require a water right for diversion to storage. Similarly, supernatant water that is extracted from the tailings and pumped from the tailings pond and back to the mill is not water diverted from storage or from waters of the state; it is recycling of industrial wastewater within the process stream. As a result, no water right is sought to store tailings slurry or to recycle water from the tailings slurry. A water right approval is sought, however, for initial freshwater fill of the tailings storage facility because water will be diverted directly to the TSF from a water source (EFSFSR or groundwater) without first being utilized within the mill.
4. Water diverted to storage, at such times when flows in the Salmon River are less than specified in Wild and Scenic River water right 77-11941, will be mitigated through non-use of a portfolio of irrigation water rights appurtenant to a property in the upper Salmon River Basin. The draft mitigation plan (Attachment 2 of Application 77-14378) provides the basis for mitigation.
5. The total diversion rate sought for industrial and mining uses is the 9.6 cfs sum of the peak demand for freshwater diversion to the mill, dust control, exploration drilling water, and excess dewatering flows, all occurring simultaneously. Although the chances of simultaneously having peak demands for all uses is low, the full amount is sought for flexibility purposes.

Description of Water Right Applications

Water right applications were submitted as a package on October 8, 2021. On November 15, 2021, amendments to the two off-site permit applications (65-24089 and 77-14381) were submitted, along with an Application for Exchange (85538) and an amended Application for Transfer 85398 for water right 77-7293. On November 18, 2021, amendments were made to correct the places of use for applications 77-14378, 85396, 85397, and 85398. The applications are summarized below.

Off-Site Applications

- **Permit 65-24089.** Application 65-24089 seeks 0.04 cfs (18 gpm) of groundwater for domestic and commercial use at the Stibnite Gold Logistics Facility near Cascade. Commercial uses will include an assay lab. Domestic uses will occur in offices, warehouses, and the assay lab. One well is proposed.



- **Permit 77-14381.** Application 77-14381 seeks 0.04 cfs (18 gpm) of groundwater for domestic and industrial use at the Landmark Maintenance Facility. Industrial uses will include filling of water trucks and vehicle maintenance. One well is proposed.

On-Site Potable Water Supply

- **Transfer 85399 (77-7141) and Permit 77-14377.** Application 85399 seeks to change the point of diversion and place of use for decree 77-7141 to four wells serving the proposed worker housing facility. During construction, the projected annual water use for the 750-worker facility is estimated to exceed the annual volume of 11.4 acre feet authorized under decree 77-7141. To accommodate the required additional volume, application 77-14377 seeks a diversion rate of 0.20 cfs from groundwater in combination with the 0.20 cfs rate authorized under 77-7141.
- **Permit 77-14379.** Application 77-14379 seeks 0.06 cfs of groundwater for domestic uses at the truck shop and ore processing facility.

On-Site Non-Potable Water Supply

- **Transfer 85396 (77-7122).** Application 85396 changes the point of diversion and place of use for EFSFSR water right. The new point of diversion is the proposed pump station at the entrance to the diversion tunnel.
- **Transfer 85397 (77-7285).** Application 85396 adds point of diversions and changes the place of use for groundwater right.
- **Transfer 85398 and Exchange 85538 (77-7293).** Applications 85398 and 85538 seek to move the point of diversion for the unnamed stream (i.e., Hennessy Creek) water right to the proposed EFSFSR pump station and to change the place of use. An exchange (rather than a transfer) is required to move the point of diversion because the EFSFSR pump station will be located slightly upstream of the mouth of Hennessy Creek. The transfer changes the place of use to entire mine site.
- **Permit 77-14378.** Permit 77-14378 seeks 9.6 cfs for industrial use and diversion to storage, and 600 acre feet per year for industrial and water quality improvement storage. Sources include runoff, groundwater, and EFSFSR. Industrial uses



include ore processing, dust control, exploration drilling water, and excess dewatering water. This permit will provide most of the water supply used at the Stibnite Gold Project.

Rule 40.05 Additional Information

Additional required under Water Appropriation Rule 37.03.08.40.05 was submitted on October 15, 2021. The additional information submitted addressed the following criteria:

- Effect on Existing Water Rights,
- Sufficiency of Water Supply,
- Good Faith, Delay, or Speculative Purposes
- Financial Resources
- Conflict with Local Public Interest, and
- Public Interest Criteria of Section 42-203C(2).

Supplemental Rule 40.05 disclosures were provided on June 2, 2022. These documents include:

- A copy of the email and letter seeking comment from Valley County
- The October 2021 Final Stibnite Gold Project Site-Wide Water Balance Model Refined Proposed Action (ModPRO2) Report
- The August 2021 Hydrologic Site Model Refined Proposed Action (ModPRO2) Report
- The October 2021 Hydrologic Site Model Refined Proposed Action (ModPRO2) Report
- An October 2021 memorandum detailing additional site-wide water balance sensitivity analyses.
- The December 2021 Final Stibnite Gold Project Water Management Plan

Significant Post-Application Decisions

The following decisions that occurred following submittal of the applications influence how the proposed water rights will be utilized and monitored.

1. **Diffuse Water (Runoff).** On August 19, 2022, hearing officer James Cefalo issued an Interlocutory Order Deciding Questions of Law related to *“Is a landowner is required to*



obtain a water right prior to capturing or using water on the surface of the landowner's property (from rainfall or melting snow) before the water enters a natural channel, if the water captured or used would eventually flow into a natural channel?"

The order found the following:

"The public waters of the state, when flowing in a natural stream or watercourse, are subject to appropriation. Diffused surface water, resulting from rainfall or snowmelt, may be captured or used by a landowner without a recorded water right before the water enters a natural stream or watercourse. The Department does not have the authority to process or approve applications to appropriate diffused surface water. The use of diffused surface water is not subject to curtailment by downstream water rights, even if the water captured would eventually flow into a natural channel. Whether certain water constitutes diffused surface water or water flowing in a natural stream or watercourse is a question of fact."

The order clarifies that contact water that is captured, stored, and used by the Stibnite Gold Project does not need a water right. This suggests that "runoff" will not be included as a source on permit 77-14378. It does not change, however, the quantities sought by permit 77-14378.

2. **Voluntary Diversion Restriction.** Perpetua engaged with the Idaho Department of Fish and Game (IDFG) and the Office of Species Conservation (OSC) for technical assistance review on potential impacts of Perpetua's proposed diversions on fish passage and fish habitat. As a result of extensive discussions, Perpetua has proposed, in a letter to the Governor's Office of Energy and Mineral Resources dated June 27, 2022, a water right condition that restricts diversions to limit habitat impacts. The proposed condition is listed below.

Net diversions from EFSFSR and groundwater under water rights 77-7122, 77-7285, 77-7293, and 77-14378 shall not cause more than 20 percent depletion to the unimpaired streamflow in the EFSFSR below its confluence with Sugar Creek when unimpaired streamflow is less than 25 cfs. For purposes of this condition:

1. *Percent depletion is equal to net diversion divided by unimpaired streamflow.*
2. *Net diversion is the sum of groundwater and EFSFSR diversions minus discharge of treated water to the EFSFSR and its tributaries.*
3. *Unimpaired streamflow is defined as the gaged flow at Sugar Creek (USGS 13311450), plus the gaged flow at EFSFSR above Sugar Creek (USGS 1331250), plus the net diversion from EFSFSR and groundwater under water rights 77-7122, 77-7285, 77-7293, and 77-14378.*



4. *Calculations shall be based on running 3-day averages of net diversion and gaged stream flows.*
5. *Diversion rate from the EFSFSR surface intake POD shall not exceed 20 percent of the unimpaired EFSFSR stream flow below its confluence with Sugar Creek (point of quantification).*

The voluntary diversion restriction will prevent dewatering of the EFSFSR during low stream flow periods.